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WILLIAM COUPER, Editor.

UNPAID SUBSCRIPTIONS.

Some of our friends have not yet sent us the amount due for last year's subscription. We hope this reminder will cause a prompt remittance, as we feel confident that all our subscribers are able and willing to pay.

BACK NUMBERS.

We have several volumes of our second year, also a few of our first, which we can furnish at one dollar per volume. Subscribers who are short of any numbers would do well to communicate with us at once, and we will endeavour to supply them as far as possible.

TO OUR SUBSCRIBERS.

We have now entered upon our third volume, the first number of which will be sent to subscribers of last year, trusting all will continue their subscription.

The Journal has been progressing during the past two years, and further efforts on the part of our friends, will enable us to extend its columns.

The study of Natural History has made rapid progress during the past few years, and we have now in Canada many students whose notes and observations, if published, would become valuable additions to this branch of literature. We are promised contributions by some of our more advanced Ornithologists and Entomologists and have no doubt this volume will contain many interesting observations not hitherto recorded, and thus become a valuable reference to those interested in these studies. We have, so far no recent works upon the Natural History of our Dominion. In Ornithology we think the time has arrived when a properly compiled work would be favourably received, and we trust, ere long one of our rising Ornithologists will give us a book on the "Birds of Canada," as valuable and interesting as the volumes of American writers.

FISH AND GAME PROTECTION.

The annual meeting of the Fish and Game Protection Society of the Province of Quebec was held in Montreal on the 20th instant. The twenty-fourth annual report submitted was an unusually satisfactory one, a large addition having been made to the membership during the past year. The following gentlemen have been appointed officers for the ensuing year. President—Mr. E. C. Monk; Vice-President—Mr. L. A. Boyer; Treasurer—Mr. Thos. Hiam; Secretary—Mr. G. H. Matthews; Committee—Messrs. F. J. Brady, R. H. Kilby, H. R. Ives, J. H. Stearns, S. Cross, W. S. Macfarlane, F. Henshaw, Alderic Deschamps, E. B. Goodacre, J. C. Nelson, John Nelson, W. Parker, Gustave Drolet, H. Rintoul, and Geo. McKinnon.

MIGRATION OF OWLS.

A female of Richardson's Owl (*Nyctale Richardsonii*) was captured at St. Laurent, near Montreal, on the 4th instant. It died after a weeks confinement in a cage. On dissection, the ovary was found to be in an advanced condition, and the eggs of a size sufficient to show that there is no doubt of its nesting in the mountains north of Montreal. No one has yet positively discovered the nest of this interesting little owl in Canada, but from what we noticed, this specimen supplies conclusive evidence that it would not go far north of the city to construct its nest. Owls, as a rule, build early in the year, the young of some species being found fully fledged in April and May. The Snow Owl appeared abundantly in the low lands of this Province in December last, remaining but a short time after the first heavy fall of snow, and the Barred Owl, almost as common, visited the neighbourhood of Montreal, probably after the Domestic Sparrows. The little Saw-whet Owl was not uncommon throughout the country during the month of January. The above species are more or less diurnal or crepuscular in their habits, and are therefore more easily discovered. Two other species of this class the Great Cinereous and Hawk Owl, formerly occurring here during December and January seem to have so far absented themselves this

fall. The Horned Owls being more of woodland birds, are not so easily seen or procured when the snow is deep, but it is evident that all the species of STRIGIDAE are abundant this winter. It would be well to investigate why these day owls appear in the neighbourhood of civilization during the months of December and January just for a short season, and then disappearing until the next cold fall sets in again.—C.

Correspondence.

SIR,—At the present time, when so much excitement prevails at home and abroad, regarding the prospective wealth of our country, and when so much capital and energy are being expended in developing its resources, it is pleasant to notice that those branches of its Natural History which are not directly associated with the acquisition of wealth, are not being forgotten, and that while hundreds are striving to gain possession of the most productive lands, the richest mineral deposits or the most valuable timber limits, a quieter class of workers are equally busily engaged collecting, and identifying such specimens of Natural History as come within the range of their observation throughout the country; the results of their researches are being placed on record, and when the excitement attendant on the first settlement of the new country now being opened up, has subsided, it will be a pleasant pastime for the rising generation to read therein the names and habits of the beautiful birds and flowers which surround their homes. I have been led to make these remarks on reading in recent numbers of your magazine, a list of birds of Western Ontario, by J. E. Morden and W. E. Saunders, of London; a list which I am sure will be valued by many a lover of birds throughout the country. It is very complete, yet it is by no means a compilation of the labours of others as such lists frequently are; on the contrary it bears (with very few exceptions) the impress of direct personal contact with the objects described. Great diligence and perseverance must have been bestowed on the subject to enable the collectors to bring it before the public in so complete a shape; yet I can also imagine their having much real enjoyment and many a pleasant ramble which only the enthusiastic student of nature can understand. In 1866, I published a similar list of birds observed near Hamilton, and on

placing the two side by side, it is astonishing to notice how closely they agree; the differences arising chiefly from stragglers which may have appeared at one point and not at the other. The following are the principal points of difference which if taken along with the recent list, may help to complete our knowledge of the subject. In the Hamilton list the total number of specimens enumerated was 241; in the London list the total number is 236. In the *London* list the following sixteen species are included which do not appear in the *Hamilton* list.—Swallow-tailed Kite; Cardinal Grosbeak; Red Phalarope; Little Yellow Rail; Scoter Duck; Tennessee Warbler; Hooded Fly-catching Warbler; English Sparrow; Mocking Bird; Common Tern; Wilson's Phalarope; Forster's Tern; Blue-grey Gnat-catcher; Long-billed Marsh Wren; Rough-winged Swallow; Banded three-toed Woodpecker. The Swallow-tailed Kite is a southern species, but a wanderer of powerful wing, who may occur again as a visitor. The Cardinal and Mocking birds are from the south, but come so close to the frontier that these may be only the pioneers of larger numbers yet to come. The little Yellow Rail; the two Terns, and the Long-billed marsh Wren, seem to prefer the greater retirement and shallower warmer water of the St. Clair Flats to the cooler inlets of Burlington Bay where I have not yet observed them. The Scoter, Tennessee Warbler, Hooded Warbler and Blue-gray Gnat-catcher, I have met with since writing my list. The Rough-winged Swallow had probably not appeared in Canada in 1866, as I find it was not met with in New England till 1875, when only one specimen was found; since that time it occurs breeding in little communities throughout the Eastern States. For the same reason, the English Sparrow was not named, as he was not introduced here till about 1873; since that time, he has passed through the different stages of rare, common, exceedingly abundant; what his next stage will be, may be affected to some extent by the members of the Fruit-growers Association, as I notice it as a matter announced for their consideration during the coming year. Wilson's Phalarope is a bird of the Prairie ponds which may again be found in suitable localities. The Red Phalarope and the Woodpecker are uncertain visitors from the north. Referring to the Ruby-crowned Wren, the London list says "they arrive from the north in October, and in mild winters remain." I was aware that

the *Gold-crest* wintered with us, but have not hitherto heard of the *Ruby-crown* doing so; if this is found to be strictly correct, it would indicate a milder climate than we have. The Northern Shrike it also says "remains in mild winters but very few breed; if even a few breed, it is well to be assured of it; but the two shrikes get so often mixed up that I think it would be well to revise this item, as to their staying with us in mild winter; they are most common here in severe weather; and at present may be seen any day scalping poor *Passer domesticus* in the public thoroughfares. The Mourning Warbler, Red-bellied Woodpecker and Yellow-billed Cuckoo still continue rare here as in 1866, the latter two I have not seen again since that time, on the contrary the Orchard Oriole was observed here at different points last summer and several pairs were known to breed near the city though, till then I had not heard of it since the notice made on my list. Early on a May morning of 1882, a male in full plumage appeared to my great delight in my orchard; I watched him sailing with outspread wing and tail, from one fruit tree to another till I got familiar with his notes and manner—then; no—I did not shoot him; it was Sunday and I deferred that operation till the morrow, but on the morrow he was gone and I saw him no more. In the Hamilton list the following twenty-two species are included which do not appear in the London list. Baird's Buzzard; Richardson's Owl; White-fronted Owl; Yellow-bellied Fly-catcher; Green black-capped Fly-catcher; Hudsonian Curlew; Surf Duck; Pomarine Skua; Robin Snipe (*Tringa canutus*); Eider Duck; Buteo elegans; Caspian Tern; Wilson's Tern; Black Guillemot; Foolish Guillemot; Great black-backed Gull; Rosy Gull; Solan Goose; Black Hawk; Canada Jay; Glossy Ibis; Hudsonian Godwit. As the result of investigation made since 1866, it is now believed that Baird's Buzzard is a different form of Swainson's Buzzard. The White-fronted Owl, the young of the Saw-whet Owl, the Black Hawk, a condition of the Rough-legged Buzzard, and Buteo elegans of the Red-shouldered Hawk. All the others are good species, some of which I have met with again and some I have not. The two little Fly-catchers will assuredly be met with by the London collectors, if they continue their researches as though rare, they are regular visitors. I have now to mention the occurrence in Canada of a few species which do not

appear in either of the lists. *Helminthophaga celata*, Orange-crowned Swamp Warbler—When visiting at the shop of a Taxidermist in Toronto a few years since, a boy brought in a capfull of warblers he had collected for the artist, and I picked out a specimen of *celata* from among the lot; it was a male, but so badly shot that the specimen was lost and I have not met with it since. *Aegiothus Xelipes*—Mealy Red-poll. I find this bird described in some works as a distinct species and in others as a northern variety of the common Red-poll. Whatever his true position may be in science, he differs in appearance as much from the common Red-poll as the Northern Shrike does from the *excubitoroides*. The general appearance of the bird is hoary-grey and so densely covered with feathers that the bill and feet are scarcely visible. *Tryngites rufescens*—Buff-breasted Sandpiper. A few years since, in a moist grassy hollow on the beach, I met with six of these delicate little birds and so gentle were they and unsuspicious that I obtained them all. In August of the following year I saw a few again at the same place, but a railroad now passes over that spot, and as I never saw them elsewhere, I may not see them again. *Numenius Borealis*—Esquimaux Curlew. I captured a specimen of this little sickle-bill, near the same resort as the preceding. He was alone, evidently a straggler from a passing flock. *Tringa Bonapartei*—Bonaparte's Sandpiper. This plain looking species I think is quite common with us, though from its general resemblance to several other kinds, is easily overlooked. *Larus Tridactylus*—Kitty-wake Gull.—This species is quite common round the bay for a few weeks every fall. *Strix flammea*—Barn Owl.—The occurrence of this species deserves something more than a passing notice, as so far as I am aware, this is the only instance of its being found in Canada. It is resident in the United States from the Atlantic to the Pacific, as far North as the latitude of North Carolina, keeping mostly along the sea coasts, becoming rare in the interior. In Scotland where the species is common, it is mostly found to frequent retired country church towers or hide away among the ivy which covers some ancient ruin. Superstition still lingers among the people in the rural districts and the owl is looked on as a bird of evil omen whose visit to a farm house is always received as a "warning" that some calamity is about to befall the family. Its cry is by no

means refreshing and many a sturdy Scot who could fix his bayonet and with nerves of steel, march to meet an unreasonable number of his country's toes, has quailed at the cry of the "*Hoolet*" when unexpectedly heard in some lonely glen. In his nocturnal excursions he is a frequent visitor to the church and graveyard and has even been seen to alight on the tombstones; perhaps the abundance of mice among the rank grass of the burying ground and the protection which the sacredness of church property affords may to some extent account for this habit; but strange to say our visitor here shewed the same predilection, as the first notice I heard of him was from one of those *boys* who are always alive to such things, who told me that "a fellow out *near the Cemetery* had killed a new kind of an owl, white and yellow with a very sharp nose." On interviewing the captor, he said he would never have known he was there, had it not been for a lot of crows who gave him away by the awful row they were keeping up round a clump of pines; taking his gun, he jumped the fence, and saw the owl in the thick of the evergreens, with the crows assailing him on every side. A charge of No. 5 killed the owl and the meeting broke up. It was a young male in fine plumage, caught perhaps in the strong south wind which prevailed for a few days during the first week in May, 1882, and carried much farther north perhaps than he intended. To get at the total number of species thus far observed in Western Ontario, it will be necessary to take from the 241 described in 1866, the four already referred to as not being good species, leaving 237 to which add 16 in the London list not included in the Hamilton one, and also 7 which do not appear in either list making in all 260 species which I think will satisfy your ornithological readers that the birds of Western Ontario have been pretty well identified. There are still a few more which I think will yet work their way round the west end of Lake Erie and, like the Orchard Oriole, make their homes among us. Of this class I would name the Summer-red bird; Tufted Titmouse; Great Carolina Wren; Black-throated Bunting; Blue Grosbeak; Prairie Warbler; Worm-eating Warbler; all these already come so near our border that a favorable wind during the spring migration may any season land them among us. When such takes place I hope you will hear of it and let us all know.

Yours very truly, T. McILWRAITH.
Cairnbrae, Hamilton, January 20, 1883.

ORNITHOLOGICAL NOTES.

"PROLIFIC" SWALLOWS.

The White-bellied Swallow, *Iridoprocne bicolor* (Vieillot) Coues: usually lay five or six eggs. Last year I experimented with a nest of these birds, which resulted in thirteen eggs being laid, as follows. April 16, entering cigar box that I had cut a small hole in, and nailed to the veranda outside my bed-room window. May 9, building nest. May 29, two eggs laid. Took one out each day from the latter date, to 5 June, being seven eggs taken out, and one left in the nest. June 17, nest contained six eggs, which I did not take. 25 June, feeding young. 14 July, young fledged.

"UNIQUE" CATBIRDS EGGS.

On the 8th July, 1872, I found a Catbird's (*Mimus Carolinensis* (Linnaeus) nest in a thin bush about four feet high, containing two eggs of the ordinary size, and colour: but, both are covered all over with distinct, small, dark spots. I have examined a large number of Catbird's eggs, and never before, saw, or heard of any with marks on them.

CROW BLACKBIRDS.

I think we have two species of Crow Blackbirds in Canada, viz. — *Quiscalus major* (Vieillot,) Boat-tailed Crow Blackbird; Jackdaw and *Q. purpureus* (Lichtenstein,) Purple Crow Blackbird; Purple Grackle. I have only observed the former in company with the latter. The only apparent difference between them being a peculiar spreading of the tail feathers when on the wing, resembling the form of a boat. Can any readers of the C. S. & N. inform me if there is any difference between the nests and eggs of the two species?

ERNEST D. WINTLE,
Montreal.

CAT BIRDS EATING BEES.

In the summer of 1879, my attention was drawn to the frequent visits of a pair of Catbirds to my apiary, and a close observation of their movements left no doubt as to their object. A bee was taken at each visit and carried to a neighbouring copse; where, after a short search I discovered their nest with young. Pity for the young birds at first prevented me from destroying the parents, but a desire to further investigate the extent of their depredations prevailed, and I shot both birds. Upon examination I found that the

young were being fed entirely upon bees, but I could only discover the bodies of drones or males; whether the instinct of these birds prompted them to select the drones in preference to the workers on account of their superior size and slower movements, or from a fear of the stings of the latter, I could not determine. Numbers of Cat-birds have for years past nested in the vicinity of my apiary, but I do not know of any other instance of these birds feeding upon bees.

W. W. DUNLOP.

Montreal, January 27th, 1883.

SPARROW NOTES.

The well known fact, that the animal and vegetable productions of the old world, when transplanted to America, thrive and multiply, has been further attested by the spread of the common sparrow of Europe, (*Fasser domesticus*) over a large part of this continent during the few years which have elapsed since its introduction. Extending on every side from the various cities into which it has been brought, it has spread over the country adjacent, and in time, will, no doubt, be everywhere abundant as far as its Southern limit. How far this will extend is an interesting question. Its range in the Old world is extensive from east to west,—from the Atlantic Ocean to Siberia. From north to south it is found all over Europe, but becomes rare in Italy south of Piedmont, and only occasionally is seen in the north of Africa. In Asia it extends southwards to the northern parts of India. It has been introduced into the Southern States of America, but, according to a statement in a recent American publication, it will not live in the hottest portions of the south, the excessive heat being fatal to it. How the species can exist in Canada during the excessive cold of winter, is certainly remarkable. And yet this hardy bird not only lives, but contrives to find abundance of food. An exceptionally cold season, however, no doubt destroys a good many individuals. I have seen the bodies of sparrows, picked up dead in the street in very cold weather, which were plump and well fed, and without any injury, so that the cause of death was probably nothing but the intense cold. In such weather they seek shelter as much as possible, and but few are seen on the wing. During several past summers, I have noticed sparrows with plumage different from the general colours of the species. Many of their wing and tail

feathers were white; in some more than others, so that some individuals appeared to be altogether greyish white. I am not aware whether the bird in Europe is subject to albinism. If not, perhaps the different climatic conditions it is exposed to in Canada are a cause of the variation in colour. The question as to the usefulness or otherwise of the sparrow in Canada is still a vexed one. At present, gardeners and farmers may be benefited by them to some extent, as they are not so numerous as to be destructive. I think, too, that between the winters' cold and the attacks of their feathered enemies, their multiplication to an injurious extent will be prevented for many years. They have, however, been introduced and acclimated, and the mischief, if it is a mischief, is now done. We trust the threatened war of extermination will not need be waged against them for a long time to come.

H. K. C.

THE WOOD-THRUSHES (*HYLOCICHLA*) OF NEW BRUNSWICK.

By M. CHAMBERLAIN, ST. JOHN, N.B.

This Province can lay claim to but three members of this sub-genus of the *Turdidae*, the Tawny, also called "Wilson's Thrush," and "Veery," the Olive-backed and the Hermit, for the Wood Thrush does not come so far north on the Atlantic seaboard, rarely occurring beyond Massachusetts and never reaching the northern limit of the Alleghanian faunal area, while its grey-cheeked congener, though probably passing through the country *en-route* to its breeding ground in the far North, has not as yet been taken within our boundaries. The Hermit and the Olive-backed are abundant throughout the Province and the Tawny is much too common to be called rare. They usually reach the vicinity of St. John during the first half of May, the Hermit arriving first, followed within a few days by the Tawny and in some two weeks by the Olive-backed. They leave here about the middle of September. These species have a general appearance when in the field so similar that none but experts can distinguish them, though, upon a close examination, the characteristics of each are found to be marked with sufficient distinctness to leave no doubt of their identification. In the field all three have the same outline from beak to tail, the same russet coloring above the same dull white breasts, more or less

spotted; but lay examples of each side by side and it will prove that the Tawny was correctly named, for his russet plumes have a reddish tint in marked contrast with the greenish shade of the Olive-backed, while the Hermit is distinguished by his tawny tail which changes to olive above the rump. But the actions of these birds are more nearly identical than either form or color, for whether seen hopping along the ground or perched upon a tree, feeding or flying, it is impossible to detect any difference in them.

Much has been written about these same manners that is not warranted by what is observed of them during their visit to this country. While here they appear neither timid nor shy, and I doubt if they ever yield to such plebian weaknesses. These birds are patricians, the premier genus of the arian aristocracy on Mr. Ridgway's roll, and true to the instincts and traditions of "the first families" are modest and retiring, and prefer the calm repose of the forest to the glare and bustle of the field and roadside. They are courageous and composed under excitement, but never quarrelsome, and are happy without being noisy. In short, they display the good breeding and refined manners of the thoroughbreds that they are. They cannot be called gregarious but they are not solitary—Hermit Thrush is a positive misnomer. They do not commingle as socially as do the species of some other families; indeed, they never appear as companions, yet it is not unusual to find a number of the same species frequenting one grove. I have seen as many as thirty Hermits within an area of a hundred yards square. In nidification our three species exhibit a marked difference; the nests are differently constructed and placed in different situations. Their eggs also differ in shape, size and color, and their songs differ—differ in tone, compass, volume, theme and duration.

The Tawny and the Hermit always build on the ground in this country, and though their nests and its location are quite similar yet they are not identical; both nests are loosely and roughly put together, but Veery's is the most compact and the neatest. They are usually placed in an indenture, either natural or formed by the birds, and screened by an overhanging branch, but while the Veery prefers a dry knoll in a damp spot, within a wood, the Hermit usually selects the margin of a grove or a patch of trees in a dry and partially overgrown open; neither build in a

dense thicket of trees or shrubbery. Under the nest is placed a cushion or platform composed of dried grass or moss. The nest proper is built of dried grass and small twigs, unmixed with mud, and is lined with fine grass; sometimes fine fibrous roots and vines are added to the lining.

The Olive-backed builds in a tree, and, like all tree-builders, makes a substantial structure. It is usually placed in the crotch of a limb some six or eight feet from the ground, generally in a moist place, and occasionally in a really wet swamp. In a specimen of this nest before me coarse grass is the predominating material in the external parts, but in the walls twigs of spruce, bits of lichens and dried leaves are mixed with the grass and all are woven into a solid mass, very firm and strong. The lining is formed by a layer of fine grass interwoven with pieces of a black, vine-like root, all neatly laid; over these, at the bottom, is a layer of skeleton leaves. The measurements are: Depth, inside, $1\frac{1}{2}$ inches; width at mouth, $2\frac{3}{4}$ inches; outside the diameter is irregular, varying from $4\frac{1}{2}$ to 5 inches. Mr. J. W. Banks tells me that of some fifty nests of the Olive-backed Thrush that he has examined all were lined with skeleton leaves; but Mr. Harold Gilbert found one in 1878 that was lined with moose hair. This nest was built in a garden, in the suburbs of St. John, within twenty feet of the house and but an arms-length from one of the main walks. The moose hair was furnished by a tame animal kept on the grounds. The three species usually lay four eggs, but it is Mr. Banks' opinion that in extremely wet or cold seasons three more frequently complete the clutch. So eminent and excellent an authority as Dr. Coues gives four and five as the number of eggs, but we have never seen more than four in any nest obtained in this country.

The Tawny and the Hermit lay immaculate eggs of a greenish-blue color, but the eggs of the Hermit are much the paler and are also the longer and more pear-shaped. The eggs of the Olive-backed are of a bright greenish-blue ground color, not so dark as the Veery's and irregularly marked with purplish-brown spots. In some examples these spots are so large and numerous they almost entirely hide the ground color. The average measurements of the eggs are: Tawny, .86 x .67; Olive-backed, .92 x .69; Hermit, .89 x .64. Few of our country-people are acquainted with the appearance of these birds but are familiar with

their songs which they attribute to one species called by them the "Swamp Robin;" for as in their appearance so in their song, there is to some degree a superficial resemblance; all have peculiar metallic voices and sing somewhat similar melodies. Their songs resemble each other much more than they resemble that of any other species. The Tawny ranks first in classification but the Hermit takes precedence as a vocalist. His song is the grandest; it is the finest musical composition and displays the most artistic execution, as well as the greatest compass and power of voice.

One is surprised to find so little about the songs of these Thrushes in the writings of the older ornithologists. Wilson says the Tawny has "no song" and calls the Hermit "a silent bird." Audubon never heard the song of the Hermit, and Nuttall does it but scanty justice. To my ear it is by far the finest song we hear in these Northern woods, and fully deserves the seemingly exaggerated title of "glorious," given it by some modern writers. The Winter Wren is his nearest rival and he startles the listener into admiration by the perfect torrent of sweet harmonies, of brilliant passages and marvellously executed trills, he hurls upon the stillness of the forest solitude in which he delights to roam; but, beautiful and joyous as his song is, in comparison with the song of the Hermit Thrush it sounds mechanical, and more like an air from a music box. The music of the Hermit never startles you; it is in such perfect harmony with the surroundings it is often passed by unnoticed, but it steals upon the sense of an appreciative listener like the quiet beauty of the sunset. Very few persons have heard him at his best. To accomplish this you must steal up close to his forest sanctuary when the day is done, and listen to the vesper hymn that flows so gently out upon the hushed air of the gathering twilight. You must be very close to the singer or you will lose the sweetest and most tender and pathetic passages, so low are they rendered—in the merest whispers. I cannot, however agree with Mr. Burroughs that he is more of an evening than a morning songster, for I have often observed that the birds in any given locality will sing more frequently and for a longer period in the morning than in the evening. I prefer to hear him in the evening, for there is a difference; the song in the morning is more sprightly—a musician would say "has greater brilliancy

of expression"—and lacks the extreme tenderness of the evening song, yet both have much the same notes and the same "hymn-like serenity." The birds frequently render their matinal hymns in concert and the dwellers in a grove will burst out together in one full chorus, forming a grander *Te Deum*—more thrilling—than is voiced by surpliced choir within cathedral walls. On one occasion an Indian hunter after listening to one of these choruses for a time said to me, "That makes me feel queer." It was no slight influence moved this red-skinned stoic of the forest to such a speech. The song of the Olive-backed ranks second in composition but he has the sweetest and most mellow voice of the three. The Veery displays the least musical ability yet his simple strain is exceedingly pleasant to the ear and his beautiful voice exhibits most strongly that peculiar resonant metallic tone which is characteristic of the genus.

I have not attempted to represent these songs by words or notes, for all such experiments as I have seen, appear to me to be failures. Neither the words of Dr. Brewer or Mr. Samuels, nor the syllables used by Mr. Ridgway or Mr. Gentry convey to my mind the idea of the songs of the birds that is impressed on my memory; and after a patient rehearsal of the notes of Mr. Horsford's score on piano, violin and flute, I fail to recognize the melodies he has attempted to write. Perhaps Mr. Horsford will say that, as I do not live in "a white pine country," I can know nothing about these Thrushes, and I certainly do not if his article in *Forest and Stream* is to be taken as evidence of what is correct. Besides their songs the three species have call notes and two or three minor notes, used chiefly when a mated pair are together. The alarm note of the Olive-backed, which Mr. Minot thinks sounds like "whit," and which he calls "the ordinary note" of the bird, is seldom used except the bird has a nest near the intruder. I think the sound would be better represented by "kwut" very abruptly and quickly uttered, with a peculiar emphatic intonation. But the songs and notes of all birds must be heard to be understood and appreciated.

COLEOPTERA FOUND IN THE
PROVINCE OF QUEBEC.

BY WILLIAM COUPER.

- HYLOBIUS 1 *pinicola*, Couper.
2 *pales*, *Herbst*.
3 *picivorus*, *Germ*.
PISSODES 1 *strobi*, *Peck*.
2 *nemorensis*, *Germ*.
ERIRHINUS 1 *rufus*, *Say*.
2 *ephippiatus*, *Say*.
CENTRINUS 1 *scutellumalbum*, *Say*.
2 *rectirostris*, *Lec*.
SCYTHROPUS *elegans*, *Couper*.
GRYPIDIUS *vittatus*, "
DORYTOMUS 1 *mucidus*, *Say*.
2 *brevicollis*, *Lec*.
3 *laticollis*, "
ATTELABUS 1 *rhois*, *Boh*.
2 *maculatus*, *Prov*.
3 *bipustulatus*, *Fabr*.
OTIDOCEPHALUS *Americanus*, *Herbst*.
MAGDALINUS 1 *baritus*, *Say*.
2 *algra*, *Herbst*.
3 *pandura*, *Say*.
4 *armicollis*, "
BALANIUS 1 *nasicus*, "
2 *rectus*
ANTHONOMUS 1 *quadrigibbus*, "
2 *tessellatus*, *Walsh*.
ORCHESTES *pallicornis*, *Say*.
PIAZORHINUS *scutellaris*, "
LAEMOSACCUS *plagiatus*, "
CRYPTORYNCHUS 1 *parochus*, *Say*.
2 *bisignatus*, "
CONOTRACHELUS 1 *crataegi*, *Walsh*.
2 *posticatus*, *Say*.
3 *nenuphar*, *Herbst*.
PIAZURUS *subfasciatus*, *Lec*. HOMOGASTER
Quebecensis, *Prov*. falls.
MONONYCHUS *vulpeculus*, *Fabr*.
CENTORYNCHUS 1 *septentrionalis*, *Gyll*,
2 *sulcipennis*, *Lec*.
MEGACETES *inaequalis*, *Say*.
RHINOCERUS *pyrrhopus*, *Boh*.
BARIS *confinis*, *Lec*.
CALANDRA 1 *granarius*, *Clair*.
2 *orizae*, *Linn*.
3 *remotepunctata*, *Gyll*.
SPHENOPHORUS 1 *pertinax*, *Oliv*.
2 *zeoe*, *Walsn*.
3 *13-punctatus*, *Ill*.
4 *ochreus*, *Lec*.
COSSONUS *corticola*, *Say*.
GONOTROPIS *gibbosus*, *Lec*.
EURYMICTER *fasciatus*, *Oliv*.
ARRHENODES *septentrionalis*, *Herbst*.

- CRATOPARIS *lunatus*, *Fabr*.
BRUCHUS *pisi*, *Linn*.
CRYPTURGUS *atomus*, *Lec*.
CHRYPHALUS *materiaris*, *Fitch*.
TRYPODENDON *bivittatus*, *Kirby*.
XYLEBORUS 1 *pyri*, *Harris*.
2 *coelatus*, *Trimm*.
DRYOCETES *septentrionis*, *Mann*.
TOMICUS 1 *calligraphus*, *Germ*.
2 *pini*, *Say*.
POLYGRAPHUS *rufipennis*, *Kirby*.
HYLESINUS *aculeatus*, *Say*.
DENDROCTONUS 1 *terebrans*, *Lac*.
2 *obesus*, *Mann*.
3 *rufipennis*, *Kirby*.
HYLASTES 1 *cavernosus*, *Trimm*.
2 *pinifex*, *Fitch*.
3 *porculus*, *Er*.
PARANDRA *brunnea*, *Fabr*.
ORTHOSOMA *brunneum*, *Forst*.
TRAGOSOMA *Harrisii*, *Lec*.
CRIOCEPHALUS 1 *agrestis*, *Kirby*.
2 *obsoletus*, *Rand*.
GONOCALLUS *collaris*, *Lec*.
BATYLE *suturalis*, *Say*.
TETROPIUM *cinnamopterum*, *Kirby*.
DULARIUS *brevilineus*, *Say*.
RHOPALOPUS *sanguinicollis*, *Horn*.
HYLOTROPES 1 *bajulus*, *Linn*.
2 *ligneus*, *Fabr*.
PHYMATODES *dimidiatus*, *Kirby*.
MERION *proteus*, *Kirby*.
ASEMUM *moestum*, *Hald*.
SPONDYLUS *upiformis*, *Mann*.
CALLIDIUM 1 *violaceum*, *Muls*.
2 *janthinum*, *Lec*.
CHION *garganicum*, *Fabr*.
ELAPHIDION 1 *incertum*, *Newm*.
2 *unicolor*, *Rand*.
MOLORCHUS *bimaculatus*, *Say*.
CYLLENE *pictus*, *Drury*.
GLYCOBIUS *speciosus*, *Say*.
CALLOIDES *nobilis*, *Say*.
ARHOPALUS *fulminans*, *Fabr*.
CLYTUS 1 *marginicollis*, *Say*.
2 *hamatus*, *Say*.
3 *longipes*, *Kirby*.
PSENO CERUS *supernotatus*, *Lec*.
XYLOTRECHUS 1 *colonus*, *Fabr*.
2 *sagittatus*, *Germ*.
3 *quadrimaculatus*, *Hald*.
4 *undulatus*, *Say*.
5 *armosus*, *Say*.
NEOCLYTUS 1 *muricatus*, *Kirby*.
2 *erythrocephalus*, *Fabr*.

(Continued from page 196.)

THE CANADIAN SPORTSMAN AND NATURALIST.

No. 2.

MONTREAL, FEBRUARY, 1883.

VOL. III.

WILLIAM COUPER, Editor.

Subscribers, please notice that the pages of "The Canadian Sportsman and Naturalist" are to be consecutive until the end of the third volume, when we will supply an index.

PROPOSED CONVENTION OF CANADIAN SPORTSMEN.

In Vol. II., No. 9, of this journal, in concluding our remarks on the Forestry Congress we stated that the next good move should be a Congress of American and Canadian sportsmen to provide correct means for the protection of Fish and Game of both countries. There are several interesting subjects which may be discussed at meetings of true sportsmen—such as the effect of forest fires causing the decrease of animals; fish and game protection in an American and Canadian view; harmonizing the game laws of the Provinces; correct nomenclature of the game animals and other kindred subjects. American sportsmen have a greater interest according to numbers and position in taking part in a Congress of this nature than we have; besides, there is something congenial in a meeting of true sportsmen; all have the same objects in view. We at least protect the bulk of woodcock and snipe bred in the north, more for the benefit of our neighboring sportsmen than our own. We do the same with geese and ducks, classed as game occurring on the waters of both countries.

At the suggestion of several of the leading sportsmen of each Province, a Committee consisting of Mr. F. J. Boswell, Major H. R. Smith and Mr. W. A. Allan has been formed for the purpose of holding, if possible, a representative convention of the sportsmen of the Dominion to consider the present anomalous condition of the game laws, and, if thought advisable, to take immediate action with a view of doing away with market shooting by foreigners, and the export of game, and for the discussion of other matters of interest to lovers of sport. At a meeting of the Central Committee (held at Ottawa) it was resolved:

"That the Secretary be instructed to issue a circular requesting some leading sportsman to

call a meeting of the sportsmen in each county in the Dominion for the purpose of electing a delegate to attend a general convention, to be held in the city of Ottawa, on Easter Monday, the 26th of March."

The objects of the above named sportsmen are exactly what our remarks referred to in the issue of the "C. S. and N." last September, but we fear that the time stated for calling a convention of the sportsmen of the Dominion is too limited, even to secure a thoroughly representative meeting from the counties in the Provinces of Ontario and Quebec; but even should these two Provinces be well represented, a good beginning will be made, offering some encouragement in the first attempt to bring the lovers of the rod and gun together to discuss these matters.

We are in favour of American sportsmen taking part in this convention, nationality having nothing to do with sporting matters, as far as we can see. There is quite a difference between a man shooting for the purpose of supplying a foreign market and a gentleman visiting Canada for legitimate sport and recreation. These and many other points will no doubt be discussed at the convention, the result of the labors of which will be looked forward to with interest by all sportsmen.

MONTREAL MICROSCOPICAL SOCIETY.

The monthly meeting of this society was held at the Natural History Society's Rooms, on Monday evening, 12th instant, Mr. Wm. Muir in the chair.

There was a good attendance, and a number of microscopes were on the table. Mr. G. J. Bowles was elected a member of the society.

The subject for the evening, "Insect weapons," was opened by a paper from Mr. Edward Murphy, who dealt more particularly with the proboscis of the mosquito. Mr. Murphy illustrated his remarks with drawings on the blackboard, showing the parts as seen by him under the microscope. He was followed by Mr. Wm. Muir, on the same subject, after which a discussion arose as to whether this insect had poisonous glands or not. Dr. Geo. Wilkins, in the absence of Dr. Osler, exhibited an apparatus for counting the corpuscles in blood, and gave an illustration under the microscope with blood drawn from a member present.

MONTREAL BRANCH, ENTOMOLOGICAL SOCIETY OF CANADA.

The ninety-fourth meeting of the society was held at the residence of the President, Mr. H. H. Lyman, on Tuesday evening, 13th instant. The President read an interesting and valuable paper on the genus *Callimorpha*, illustrating his remarks by a large collection of the species, and by drawings of the types in the British Museum, made by Mr. Butler, of that institution. We venture to say that the confusion heretofore existing with regard to this variable genus is likely to be got rid of through Mr. Lyman's careful and thorough work, with the assistance of Mr. Caulfield. Mr. G. J. Bowles read a "Preliminary List of the Geometridæ of the Province of Quebec," opening up interesting questions as to the limits of the northern and temperate insect faunæ of Canada. A third paper was read, entitled "Notes on some diurnal Lepidoptera occurring in Canada," by Mr. Caulfield, giving Canada as the habitat of a number of species of butterflies not stated in W. H. Edwards's catalogue as being found in this country.

THE TOMMY COD.

In "L'Opinion Publique" of the 18th January last, is an article on the Tommy Cod, *Morrhua pruinosa*, Mitchell, by the eminent French-Canadian *littérateur*, M. Benjamin Sulte. He gives an interesting account of the fishery carried on annually in the vicinity of Three Rivers, and supplies data which disprove the common idea that it is the young of the cod. But little is known of the history of this little fish, although it has been an important article of food in Lower Canada "from time immemorial," so that new information with regard to it is interesting, both to the naturalist and the public.

Mr. Sulte states that the Tommy cod ranges from Newfoundland to Three Rivers, but it is much more widely distributed, being found on the coast of New York, and no doubt on that of New England, if not farther east. DeKay tells us that it ascends the Hudson as far as Albany, where it is abundant at intervals of a few years. On the Long Island coast it is sometimes so plentiful that it can be shovelled on to the shore from the shallow water. It goes up the Hudson, as it does the St. Lawrence, at the beginning of winter, and is there called the Tom Cod or Frost-fish. It is one of these fishes, apparently, which inhabit waters of no great depth, and, except during the an-

nual migration, remains in salt water the whole year. All through the summer it may be caught on the shores of the lower St. Lawrence. The writer has often fished for them, from July to September, from the wharf at Rivière du Loup, and the rocks between there and Cacouna. They come up in great numbers with the rising tide, and like the ordinary cod, are voracious feeders, taking almost anything in the shape of bait. In December, however, they ascend to fresh water, reaching Quebec and Three Rivers about Christmas, the fishery lasting until about the 10th January. At Quebec they turn into the estuary of the River St. Charles with every tide, and the ice is dotted over with a village of *cabanes*, set up to shelter the fishers, who gather a large harvest while the migration lasts. Multitudes, however, go past Quebec, continuing their progress along the North Shore until they reach Three Rivers, but pay a heavy tribute to the *habitans* on the way. At Three Rivers they go up the St. Maurice river in shoals, as far as the rapids of the Forges, after which all trace of them is lost. We are not aware whether they have been taken above Lake St. Peter.

Strange to say, on passing out of tide water they swim near the surface, contrary to their usual habit of swimming near the bottom. This peculiarity gives the *habitans* an opportunity of taking them in great numbers. Large frames six feet high and two or three feet square, filled in with wickerwork, and open on one side some distance from the bottom, are plunged in through holes cut in the ice. The opening in the frame is placed towards the advancing shoals, and the trap is soon withdrawn, filled with the writhing tommy cods. In this way they are secured by the sleighload. On the St. Maurice, cabins are built, in which the fisherman eats and sleeps, waging war on the "petits morues" until they cease to pass. None are caught on their return. They seem to scatter and seek the deeper parts of the river, and the fishery is over, in fresh water at least, until the following December.

It has been stated above, that doubts have been entertained as to whether this fish is a distinct species from the Cod. Even experienced naturalists have had these doubts. But the facts above given seem to make the matter a certainty. The annual migration into fresh water (although contrary to the general habit of the cod family, as far as known) must be for the purpose of spawning. The fish, when

taken in winter, are full of eggs, and ready to propagate, and instinct drives them up into fresh water for that purpose. On the St. Lawrence, they ascend the tributary rivers on the North Shore with this end in view, but in some of them, at least, they cannot penetrate very far. They can go only a few miles up the St. Charles at Quebec, and in the St. Maurice there are falls about fifteen miles up which would bar their progress. Some of the other rivers between Three Rivers and Quebec may be more accessible to them. The conditions under which the spawn is deposited are, however, unknown.

Mr. Sulte says that the Tommy Cod has been an article of food in Canada ever since the French colonists arrived, and no doubt it was relished by the Indians long before that time. No diminution in the supply has been noticed. To-day the quantities used, principally by the French-Canadian population, are very great, and as Jack Frost comes to help, and preserves the fish in the best manner possible, none of this valuable food supply is wasted.

H. K. C.

BIRDS OF WESTERN ONTARIO.

SIR,—Since the appearance of your January number I have been requested to explain two points in the list of Birds of Western Ontario, and have pleasure in doing so: 1st.—As regards the common Tern, it appears in the Hamilton list as *Sterna Wilsoni*, and in the London list as *Sterna fluviatilis*, both names were taken from the Smithsonian catalogue, but were taken at different dates, and the name had been changed in the interval. To be strictly correct in following the Smithsonian nomenclature, we should drop the *Wilsoni* and adopt the *fluviatilis* as being the most recent, and let us hope that there will soon be an end of these frequent changes in specific names which are so perplexing to the student. 2nd.—As regards the large Rails, the specimen referred to in the Hamilton list was brought me by a local sportsman who said it was the only one of the kind he had ever seen here, but he had often shot them at Baptiste Creek; that they bred there; this was to all appearance the Clapper Rail, as the measurement as also the bleached-worn appearance of the plumage agreed with the descriptions given of that species, and the entry was made for the list in accordance with these facts. Whether I was strictly correct or not in the identification will probably not be known, as the specimen referred to was lost, and neither of the

large rails has been found here since that time; the one which breeds at Baptiste Creek and the St. Clair marshes is the king rail, *Rallus elegans*.

I have to record the capture within the past ten days of a second specimen of the Barn Owl, *Strix flammea*; this was a female shot at a farm-house near Dundas, about four miles from where the other was obtained. It is quite possible that this pair may have left their home in the south in company, bent on a voyage of discovery; if so, they have met the fate which frequently befalls adventurers in new countries, viz.: been skinned by the natives.

Pine grosbeaks have been very abundant round the city since the middle of January; they are nearly all in the grey plumage, being either females or immature males. The appearance of these birds in such numbers may be taken as an indication of the severity of the winter in the north as I have not heard of their being here at all for many years past.

Your truly,

T. McILLWRAITH.

Cairnbrae, Hamilton, O., 14th Feb., 1883.

CROW BLACKBIRDS.

Your correspondent in the January No. of the "C. S. & N.," Mr. Ernest D. Wintle, probably refers to but one species of grackle in his remarks under the above caption. The Boat-tailed Grackle is a Southern species, not yet recorded as found in Canada, I believe. The Purple Grackles are abundant in Canada, and the "boat-like" spreading of the tail may be commonly observed during the love season of these birds, when the males thus display themselves, both on the wing and strutting upon the ground. I have often watched these grackles in the city of Three Rivers, P. Q., where they breed abundantly, and being unmolested there, are very tame, feeding upon the streets and in gardens. The males are larger and of handsomer plumage than the females, and the contrast is quite noticeable.

The Rusty Grackle, a smaller species is also found in Canada, but Mr. Wintle's remarks will not apply to this bird.

The Boat-tailed Grackle exceeds in size the Purple Grackle, especially in length, and would never be confounded with any of our smaller North American Grackles. In my catalogue of the "Birds of Maine" I have recorded a single occurrence of the Boat-tailed Grackle in this State, and I do not know of any other record of the species occurring so far north.

Portland, Maine.

EVERETT SMITH.

In answer to Mr. Wintle's query in the January No., I have been misled by the same bird, *Quiscalus purpureus*, but seeing one approaching with his tail spread one day when I was shooting, I took him in the act, and of course he proved to be merely an ordinary crow blackbird. *Q. major* inhabits the South Atlantic and Gulf States, never ascending to New England, and is strictly maritime.

W. E. SAUNDERS.

We have only one species of Crow Blackbird in Canada (*Quiscalus purpureus*). The peculiar spreading of the tail sometimes noticed in the males of this species has led to their being confounded with the Boat-tailed Grackle (*Quiscalus major*), which is a larger and more southern species. The Bronzed Grackle first described by Ridgway as a subspecies (*Quiscalus purpureus aeneus* Ry), also occurs here, being associated with *purpureus* throughout the whole range of the latter. The difference between the two birds appears to be only a matter of color, and as the Bronzed is not confined to any particular locality, many ornithologists do not recognize it as a geographical variety.

Montreal.

W. W. DUNLOP.

FROM BULL. NUTT. ORN. CLUB. Vol. VII, No. 4.
Oct., 1882.

LIST OF BIRDS ASCERTAINED TO OCCUR WITHIN TEN MILES FROM POINT DE MONTS, PROVINCE OF QUEBEC, CANADA; BASED CHIEFLY UPON THE NOTES OF NAPOLEON A. COMEAU.

BY C. HART MERRIAM, M. D.

Point de Monts is the southward termination of a high rocky promontory that separates the river from the Gulf of St. Lawrence, on the north shore. It is in latitude 49° 19' north. The country is well wooded, the forests consisting chiefly of spruce (both white and black) and balsam. Scattered about are a few birches, poplars, cedars, and tamaracks; and on a sandy terrace near the Godbout River is a quantity of the northern scrub pine (*Pinus banksiana*) that here attains a height of thirty and sometimes forty feet. The region is so far north that not only are the oaks and hickories absent, but even the hardy beech and maple do not grow here.

I visited this section of the coast in July, 1881, and again in July, 1882; and with the observations made at these times I have in-

corporated the notes kindly placed at my disposal by Mr. Napoleon A. Comeau, guardian of Godbout.

The nomenclature followed is that of the second edition of Dr. Coues's Check List of North American Birds.

1. *Turdus migratorius*; Robin. A common summer resident. Arrives about the first of May, and remains till late in November. Seen Dec. 22, 1879.

2. *Turdus undulace nanus*; Hermit Thrush. Tolerably common; breeds.

3. *Turdus ustulatus swainsoni*; Olive-backed Thrush. Not uncommon; breeds.

4. *Sialia sialis*; Blue-bird. Extremely rare. During a residence of many years at Godbout, Mr. Comeau has seen but one pair of these birds; they nested in a stump near his house in July, 1880.

5. *Regulus calendula*; Ruby-crowned Kinglet. A male was shot June 4, 1882.

6. *Parus atricapillus*; Black-capped Chickadee. A common resident.

7. *Parus hudsonicus*; Hudsonian Chickadee. A common resident, like the last.

8. *Sitta canadensis*; Red-bellied Nuthatch. Tolerably common in winter, but not observed in summer.

9. *Eremophila alpestris*; Horned Lark. First seen April 21, 1882, after which they were common for about three weeks and then disappeared. I found a young one, dead, at Godbout in July, 1881.

10. *Anthus ludovicianus*; Titlark. Tolerably common summer resident, and doubtless breeds. I have seen flocks of them in July feeding on the beach at low water. First seen May 7, 1882.

11. *Helminthophila peregrina*; Tennessee Warbler. A tolerably common summer resident. First shot June 6, 1882.

12. *Dendroica aestiva*; Summer Warbler. Not very common. First seen June 6, 1882.

13. *Dendroica virens*; Black-throated Green Warbler. A tolerably common summer resident.

14. *Dendroica coronata*; Yellow-rumped Warbler. A rather common summer resident. First seen May 29, 1882.

15. *Dendroica blackburne*; Blackburn's Warbler. Rather rare. Shot June 9, 1882.

16. *Dendroica striata*; Black-poll Warbler. Rare. Mr. Comeau shot a male, June 7, 1882.

17. *Dendroica macdosa*; Black-and-Yellow Warbler. The commonest Warbler, breeding abundantly. Earliest seen May 29, 1882.

18. *Siurus naevius*; Water Thrush. Rather rare. Shot June 6, 1882. Others seen.

19. *Geothlypis trichas*; Maryland Yellow-throat. Not common. Saw two in the clearing about Mr. Allan Gilmour's camp on the Godbout.

20. *Myiodytes pusillus*; Black-capped Yellow Warbler. Rather rare. Shot June 9, 1882. Others seen.

21. *Myiodytes canadensis*; Canadian Flycatching Warbler. A tolerably common summer resident.

22. *Setophaga ruticilla*; Redstart. Tolerably common. First seen June 9, 1882.

23. *Hirundo erythrogastra horreorum*; Barn Swallow. Rare, and not known to breed. Mr. Comeau shot one May 29, 1882.

24. *Iridoprocne bicolor*; White-bellied Swallow. Common; breeds plentifully. First seen May 12, 1882.

25. *Petrochelidon lunifrons*; Cliff Swallow. A small colony nested in the deserted Hudson's Bay Trading Post at Godbout this year.

26. *Ampelis cedrorum*; Cedar-bird. A tolerably common summer resident.

27. *Lanius borealis*; Great Northern Shrike. Occurs, but is not known to breed.

28. *Pinicola enucleator*; Pine Grosbeak. A tolerably common resident. In autumn it feeds extensively upon the berries of the mountain ash. I have already published a note on the breeding of this species at Godbout.*

29. *Carpodacus purpureus*; Purple Finch. Not very common. First seen April 26, 1882.

30. *Loxia leucoptera*; White-winged Crossbill. Tolerably common, but somewhat irregular in appearance. I found this species to be very abundant here in July, 1881, while in July, 1882, I did not see any.

31. *Egithus linaria*; Red-poll. Very abundant in winter, large flocks being seen nearly every day. They all seem to move in one direction, following the shore westward.

32. *Chrysomitris pinus*; Pine Linnet. Generally common, but somewhat irregular.

33. *Astragalinus tristis*; American Goldfinch. Rather rare. I saw a small flock in July, 1882.

34. *Plectrophanes nivalis*; Snow Bunting. Very common in flocks in winter. Seen as late as the middle of May.

35. *Centropus lapponicus*; Lapland Longspur. Large flocks of this species appear on this part of the coast during the latter part of April, remaining till about the middle of May. They are then very abundant, occurring both alone and in flocks with the preceding.

36. *Passerculus sandwichensis savanna*; Savanna Sparrow. Tolerably common, breeding on the thinly grassed sandfields about the mouth of the Godbout. Mr. Comeau shot one as early as April 21, 1882.

37. *Melospiza fasciata*; Song Sparrow. A rather common summer resident in suitable places, arriving early in May. Particularly numerous in the clearing about Mr. Allan Gilmour's camp on the Godbout.

38. *Junco hiemalis*; Black Snowbird. Very common. First seen May 16, 1882.

39. *Zonotrichia albicollis*; White-throated Sparrow. The commonest Sparrow, breeding everywhere. First seen May 14, 1882. This bird is the "Nightingale" of the Canadians.

40. *Zonotrichia leucophrys*; White-crowned Sparrow. Breeds, but is not common.

41. *Agelaius phoeniceus*; Red-shouldered Blackbird. Very rare. The only one ever seen here was a female, and was shot by Mr. Comeau May 22, 1882.

42. *Xanthocephalus icterocephalus*; Yellow-headed Blackbird. An accidental straggler from the west. Mr. Comeau shot a male of this species in his door yard, at Godbout, early in September, 1878.†

43. *Quiscalus purpureus*; Crow Blackbird. Rare. Sometimes seen in flocks in spring.

44. *Corvus corax*; Raven. A common resident. May 12, 1882, Mr. Comeau found one of their nests on the face of a cliff about half-way between Godbout and Point de Monts. It contained four full-fledged young that must have been at least three or four weeks old.

45. *Corvus frugivorus*; Crow. A common summer resident, sometimes wintering. I have observed that the Crows here find much of their food along the beach at low water.

46. *Cyanocitta cristata*; Blue Jay. Resident but not very common.

47. *Perisoreus canadensis*; Canada Jay. A tolerably common resident.

48. *Tyrannus carolinensis*; King-bird. Not rare. Earliest seen June 9, 1882.

49. *Empidonax flaviventris*; Yellow-bellied Flycatcher. I have seen a specimen that Mr. Comeau shot June 15, 1882.

50. *Chordeiles popetue*; Night-hawk. A common summer resident. First seen June 5, 1882. I saw Night-hawks flying about overhead nearly every day while at Godbout, both in July, 1881, and July, 1882.

51. *Chaetura pelagica*; Chimney Swift. Generally tolerably common, but not seen this year.

52. *Ceryle alcyon*; Belted Kingfisher. A rather common summer resident, arriving about the first of May. About June 13, 1882, Mr. Comeau found three Kingfisher's nests in a bank, and each contained seven fresh eggs.

53. *Hylotomus pileatus*; Pileated Woodpecker. Very rare. Mr. Comeau has shot but one here.

54. *Picus villosus*; Hairy Woodpecker. A tolerably common resident, being particularly fond of the burnt-over scrub-pine barren near Godbout.

55. *Picus pubescens*; Downy Woodpecker. A tolerably common resident, like the last,

56. *Picoides arcticus*; Black Three-toed Woodpecker. Resident; not rare.

57. *Colaptes auratus*; Golden-winged Woodpecker. A tolerably common summer resident. First seen May 14, 1882.

58. *Bubo virginianus*; Great Horned Owl. A rather common resident.

59. *Asio wilsonianus*; Long-eared Owl. Rare. Mr. Comeau shot three in May, 1877 or 1878.

60. *Asio accipitrinus*; Short-eared Owl. A rather rare summer resident. Earliest seen May 9, 1882.

61. *Strix nebulosa*; Barred Owl. A tolerably common resident.

62. *Nyctea scandiaca*; Snowy Owl. Very irregular in appearance; sometimes very abundant in winter, and sometimes not seen for several years. Mr. Comeau shot one May 17, 1882, and Mr. Gregoire Labrie killed one May 31, 1880. These are the latest dates at which they have been seen in this section.

63. *Surnia funerea*; Hawk Owl. Common in winter, generally appearing in November and not remaining later than February.

64. *Nyctala tengmalmi richardsoni*; Richardson's Owl. A common winter resident, and very tame. This Owl has a low liquid note that resembles the sound produced by water slowly dropping from a height; hence the Montagne Indians call it *pillip-pile-tshish*, which

* See this Bulletin, Vol. VII, pp. 120, 121.

† See this Bulletin, Vol. VI, p. 246.

means "water-dripping bird." These Indians have a legend that this was at one time the largest Owl in the world, and that it had a very loud voice. It one day perched itself near a large waterfall and tried not only to imitate the sound of the fall but also to drown the roaring of the torrent in its own voice. At this the Great Spirit was offended and transformed it into a pigmy, causing its voice to resemble slowly dripping water instead of the mighty roar of a cataract.

65. *Nyctala acadica*; Saw-whet Owl. Not very common. In winter Mr. Comeau once saw one of these little Owls fly out from within the carcass of a great northern hare that had been caught in a snare. The Owl had eaten away the abdomen and was at work within the thoracic cavity when frightened away.

66. *Circus cyaneus hudsonius*; Marsh Harrier. A tolerably common summer resident. Three individuals were seen as early as May 5, 1882.

67. *Astur atricapillus*; Goshawk. Not rare.

68. *Falco sacer obsoletus*; Labrador Gyrfalcon. Mr. Comeau has killed several of these rare Falcons in the vicinity of Godbout.

69. *Falco columbarius*; Pigeon Hawk. Not rare, and doubtless breeds.

70. *Falco sparverius*; Sparrow Hawk. Rare. One shot May 5, 1882.

71. *Archibuteo lagopus sancti-johannis*; Rough-legged Buzzard. Breeds, and is rather common. The southward migration commences about the last of September and continues into November. During this period large numbers of these Hawks are constantly passing over this part of the coast on the way to their winter quarters.

72. *Pandion haliaetus*; Fish Hawk. A few pairs of Fish Hawks breed in this vicinity every year. They were first seen May 2, 1882. They depart in November.

73. *Aquila chrysaetus*; Golden Eagle. Breeds, and is not particularly rare. Mr. Comeau has shot three, and knows of half a dozen that were caught in steel-traps.

74. *Haliaetus leucocephalus*; White-headed Eagle. Tolerably common; breeds. They arrive in March, and remain till December or January. Mr. Comeau found a nest, early in June, that contained three young about the size of Crows.

75. *Ectopistes migratorius*; Wild Pigeon. A rather rare and very irregular visitor.

76. *Zenaidura carolinensis*; Carolina Dove. Of this southern species Mr. Comeau has killed two at Godbout; the first, a male, he shot October 10, 1881, and the second, a female, June 6, 1882.

77. *Canace canadensis*; Spruce Grouse. A resident species, but rather rare.

78. *Bonasa umbella*; Ruffed Grouse. A resident, like the last, but not common. This appears to be the northern limit of the Grouse on the east coast, and I was unable to find any evidence of its presence lower down along the north shore of the gulf.

79. *Lagopus albus*; Willow Ptarmigan. Very abundant during the early part of some winters, but during other years it does not occur at all. They generally arrive about the first of December, and a few remain till the first of May. They are always most abundant in December, and Mr. Comeau once killed six hundred before Christmas! He has shot as many as eighty-two in a single morning.

80. *Squatarola helvetica*; Black-bellied Plover. Rather rare and irregular in occurrence. Mr. Comeau has shot it in May and September.

81. *Charadrius dominicus*; Golden Plover. Tolerably common in September, and sometimes seen in spring.

82. *Aegialites vociferus*; Killdeer Plover. Mr. Comeau says that this species breeds and is not rare.

83. *Aegialites semipalmatus*; Ring-neck. Occurs in spring.

84. *Streptopelia interpres*; Turnstone. Tolerably common in September.

85. *Steganopus wilsoni*; Wilson's Phalarope. Mr. Comeau tells me that this Phalarope occurs during the fall migration, but is not common.

86. *Phalaropus fulicarius*; Red Phalarope. Not rare in September.

87. *Gallinago wilsoni*; Snipe. A rather rare migrant. Earliest killed May 9, 1882.

88. *Macrorhamphus griseus*; Red-Breasted Snipe. Occurs during the fall migration.

89. *Ereunetes pusillus*; Semipalmated Sandpiper. Tolerably common. First seen during the latter part of May, and common in August and September.

90. *Actodromas minutilla*; Least Sandpiper. Rather common in spring and fall.

91. *Actodromas maculata*; Pectoral Sandpiper. Occurs in fall, but is not common.

92. *Actodromas bonapartii*; White-rumped Sandpiper. Mr. Comeau shot one May 31, 1882.

93. *Calidris arenaria*; Sanderling. Occurs in the fall migration.

94. *Totanus melanoleucus*; Greater Tattler. Common spring and fall. Earliest shot May 9, 1882. Passes south in September.

95. *Totanus flavipes*; Yellow-shanks. Common during the migrations. Occurs with the preceding.

96. *Rhyacophilus solitarius*; Solitary Tattler. Tolerably common, breeding about the fresh water lakes and streams.

97. *Tringoides macularius*; Spotted Sandpiper. A tolerably common summer resident.

98. *Numenius borealis*; Eskimo Curlew. Common in August and September.

99. *Numenius hudsonius*; Hudsonian Curlew. Rather rare. Mr. Comeau has shot it in August.

100. *Ardea herodias*; Great Blue Heron. Rather rare, and generally seen in September.

101. *Ardea egretta*; Great White Egret. Accidental straggler from the south. One seen June 9, 1882, on an island in Godbout River.

102. *Botaurus mugilans*; American Bittern. Rare. Mr. Comeau has shot several here, and tells me that they are common at Manacougau, thirty miles west of Godbout.

103. *Cygnus* sp.—? A swan was shot at Point de Monts by an Indian in 1870.

104. *Chen hyperboreus*; Snow Goose. Rare. Mr. Comeau has shot it in October.

105. *Bernicla brenta*; Brant Goose. Breeds, and is by no means rare. Arrives in April, remaining into November and sometimes December.

106. *Bernicla canadensis*; Canada Goose. A common migrant, arriving during the latter part of March and departing in November. They breed at Natashquan, Western Labrador.

107. *Anas obscura*; Black Duck. A tolerably common summer resident, breeding about the fresh water lakes.

108. *Dafila acuta*; Pintail. The only one Mr. Comeau ever saw here he shot June 7, 1882.

109. *Querquedula carolinensis*; Green-winged Teal. Rare here, but they breed at Manacougan.

110. *Querquedula discors*; Blue-winged Teal. Rare, but oftener seen than the preceding. Has been shot early in May.

111. *Fuligula affinis*; Scaup Duck. Tolerably common in October.

112. *Fuligula collaris*; Ring-neck Duck. Mr. Comeau has killed two in spring.

113. *Clangula glaucium*; Golden-eye. A resident species, and tolerably common. Breeds on fresh water only. Remains throughout the winter.

114. *Clangula islandica*; Barrow's Golden-eye. A common resident, breeding, like the foregoing on fresh water, and remaining on the Gulf all winter.

115. *Clangula albeola*; Butter-ball. Rare. Has been shot in October.

116. *Harelda glacialis*; Old Wife. Resident. Very abundant in winter, the largest flocks being seen in December, January, and February. Mr. Comeau took one in full summer plumage as early as April 23, 1882. Tolerably common in summer, and supposed to breed.

117. *Histrionicus minutus*; Harlequin Duck. Rare, and only seen during the latter part of April and early in May. This year Mr. Comeau saw two April 16, and shot one May 8, out of a flock of four.

118. *Somateria mollissima*; Eider Duck. A permanent resident, but rather rare.

119. *Somateria spectabilis*; King Eider. Rare. Has been known to breed.

120. *Edemia americana*; Black Scoter. Common from early in April till some time in November. They do not remain through the winter.

121. *Edemia fusca*; Velvet Scoter. A common resident. The largest flocks are seen in April and November, and the species is common all the year round.

122. *Edemia perspicillata*; Surf Duck. Very common from April to November, but does not winter. The males greatly preponderate over the females in this species, and Mr. Comeau tells me that the proportion is always about seven males to one female.

123. *Mergus merganser*; Shell-drake. Tolerably common, breeding about the fresh water.

124. *Mergus serrator*; Red-breasted Merganser. Very common, frequenting both fresh and salt water.

125. *Sula bassana*; Gannet. Occasional. I have found it breeding in numbers at the west end of Anticosti, but do not think it nests farther up in the Gulf.

126. *Phalacrocorax carbo*; Common Cormorant. Rare, but Mr. Comeau has shot several here.

127. *Phalacrocorax dilophus*; Double-crested Cormorant. Mr. Comeau shot a female May 19, 1882.

128. *Stercorarius pomatorhinus*; Pomatorhine Jaeger. Rare.

129. *Stercorarius parasiticus*; Parasitic Jaeger. Rather rare. Mr. Comeau shot six in one day about the middle of May, 1874.

130. *Larus glaucus*; Glaucous Gull; Ice Gull. Rather rare. Usually seen in February, March, and April. I have a handsome male which was shot by Mr. Comeau April 29, 1882.

131. *Larus leucopterus*; White-winged Gull. Not

common. Commonly appears and disappears with the last. Mr. Comeau has shot it as late as May 1.

132. *Larus marinus*; Great Black-backed Gull. Breeds, and is tolerably common. It is absent only in January and February. July 17, 1882, I found one of their nests on Great Baule, one of the Seven Islands. It consisted of a little coarse grass placed in a slight depression in the rock, and was lined with a sort of pad, about four inches in diameter, of beautiful soft down, on which reposed a single egg. The egg had been incubated, but failed to hatch.

133. *Larus argentatus smithsonianus*; Herring Gull. Very abundant, breeding plentifully on suitable rocks. Arrives about the middle or latter part of April, remaining into November.

134. *Rissa tridactyla*; Kittiwake. Breeds abundantly. Arrives late in April or early in May, remaining into December. This and the preceding are the commonest Gulls along this part of the coast, and are constantly seen, both singly and in immense flocks. They follow the receding tide and cover the sand flats that are exposed at low water, feeding upon the molluscs and other marine animals that abound in such situations. I have seen more than a thousand at one time.

135. *Pagophila eburnea*; Ivory Gull. Very rare. Mr. Comeau shot a male in April, 1877, at Point de Monts. The specimen was presented to the Museum at Bersimis Mission, where it is now preserved.

136. *Chroicocephalus philadelphia*; Bonaparte's Gull. A tolerably common summer resident, arriving late in May.

137. *Sterna macrura*; Arctic Tern. Very abundant at certain places, where it breeds. Mr. Comeau once killed sixteen at one shot, flying. It arrives early in June.

138. *Cymochorea leucorhoa*; Leach's Petrel. Common in summer.

139. *Colymbus torquatus*; Loon. Common. Breeds about the fresh-water lakes of the interior. I saw many, and heard others, in the Gulf, near Point de Monts, in July. Earliest seen April 12, 1882.

140. *Colymbus septentrionalis*; Red-throated Diver. Common, breeding with the last, but not arriving so early, usually coming in May.

141. *Podiceps griseigena holbaelli*; Red-necked Grebe. Rare; one shot in September.

142. *Podilymbus podiceps*; Dab-chick; Hell Diver. Not rare; killed both spring and fall.

143. *Fratercula arctica*; Puffin; Sea Parrot. Not common as far up as Point de Monts, but very abundant on the Mingan Islands, where they breed by thousands.

144. *Alle nigricans*; Dovekie. Very abundant in flocks during some winters, arriving early in December and remaining till some time in February. During other winters it is rare or does not occur at all.

145. *Uria grylle*; Black Guillemot; Sea Pigeon. A common resident, breeding not only here, but even on the islands off the mouth of the Saguanay, an hundred and fifty miles farther up the St. Lawrence.

146. *Lowia troile*; Foolish Guillemot; Murre. Like the Dovekie, the Murre is sometimes very abundant here in winter, while during other winters it does not occur at all. It is not wary, and does not even know enough to keep out of the way of dogs along the shore. It is well named the "Foolish" Guillemot, for both its habits and appearance deserve this appellation. In fact it looks like a perfect idiot, swimming over on one side as if one leg were broken, and staring vacantly at its enemies without attempting to escape. Its *tout ensemble* is stupid and gawky.

During the winter of 1875 they were so exceedingly abundant that Mr. Comeau shot about a thousand for their feathers, and his dog caught over fifty. They were all in very poor flesh, some being little more than animated skeletons, and a great many died and were washed ashore.

147. *Utamania torda*; Razor-billed Auk. Not common here, but breeds on the Mingan Islands.

COLEOPTERA FOUND IN THE PROVINCE OF QUEBEC.

By WILLIAM COUPER.

CLYTANTHUS *uricola*, Oliv.
 CYTAPHORUS *verrucosus*, Oliv.
 EUDERES *picipes*, Fabr.
 DESMOCERUS *palliatu*s, Forst.
 STENOCORUS *lineatus*, Oliv.
 CENTRODERA *decolorata*, Harris.
 RHAGIUM *lineatum*, Oliv.
 TOXOTUS 1 *Schaumii*, Lec.
 2 *vittiger*, Rand.
 PACHYTA 1 *monticola*, Rand.
 2 *liturata*, Kirby.
 ANTHOPHILAX 1 *attenuatus*, Hald.
 2 *viridis*, Lec.
 ACMAEOPS 1 *trivittatus*, Say.
 2 *proteus*, Kirby.
 3 *pratensis*, Laich
 GAUROTUS *cyanipennis*, Say.
 TYPOCERUS 1 *zebratus*, Fabr.
 2 *velutinus*, Oliv.
 3 *sinuatus*, Newm.
 LEPTURA 1 *emarginata*, Fabr.
 2 *plebeja*, Rand.
 3 *subhamata*, Rand.
 4 *lineola*, Say.
 5 *capitata*, Newm.
 6 *subargentatus*, Kirby.
 7 *zebra*, Oliv.
 8 *impura*, Lec.
 9 *6-maculata*, Linn.
 10 *nigrella*, Say.
 11 *carbonata*, Lec.
 12 *Canadensis*, Fabr.
 13 *rubrica*, Say.
 14 *circumdata*, Oliv.
 15 *vagans*, Oliv.
 16 *haematites*, Lec.
 17 *chrysocoma*, Kirby.
 18 *nigrolineata*, Bland.
 19 *proxima*, Say.
 20 *pedalis*, Lec.
 21 *vittata*, Germ.
 22 *nitidipennis*, Prov.
 23 *pubera*, Say.
 24 *sphaericollis*, Say.

25 *vibex*, Newm.
 26 *mutabilis*, Newm.
 27 *biforis*, Newm.
 28 *atrata*, Lec.
 29 *cordifera*, Oliv.
 30 *aspera*, Lec.
 31 *montivagans*, Couper.

The description of this *Leptura* is given in the Trans. Lit. and Hist. Soc., Quebec, 1864. It may be a var. of *6-maculata* or a northern form whose elytral markings are not permanent.

EVODINUS *monticola*, Rand.
 BELLAMIRA *scalaris*, Say.
 STRANGALIA *luteicornis*, Fabr.
 MONOHAMMUS 1 *titillator*, Oliv.
 2 *confusus*, Kirby.
 3 *scutellatus*, Say.
 4 *marmoratus*, Kirby.

L'Abbé Provancher did not give this beautiful insect in his "Petite Fauna Entomologique du Canada." The insect occurs at Quebec. My specimens were taken in the latter city.

DORCASHEMA *nigrum*, Say.
 GOES *oculatus*, Lec.
 LEPTOSTYLUS 1 *aculifer*, Say.
 2 *macula*, Say.
 LEPTARGUS *angulatus*, Lec.
 GRAPHISURUS 1 *triangutifer*, Hald.
 2 *faciatus*, DeGeer.
 POGONOCERUS 1 *pencillatus*, Lec.
 2 *mixtus*, Hald.
 EUPOGONIUS *subarmatus*, Lec.
 SAPERDA 1 *obliqua*, Say.
 2 *calcarata*, Say.
 3 *candida*, Fabr.
 4 *vestita*, Say.
 5 *tridentata*, Oliv.
 6 *lateralis*, Fabr.
 7 *moesta*, Lec.
 8 *concolor*, Lec.
 OBEREA 1 *amabilis*, Hald.
 2 *tripunctata*, Fabr.
 TETRAOPES *tetraophthalmus*, Forst.
 DONACIA 1 *Harrisii*, Lec.
 2 *hirticollis*, Kirby.
 3 *magnifica*, Lec.
 4 *distincta*, Lec.
 5 *subtilis*, Kuntz.
 6 *confusa*, Lec.
 7 *emarginata*, Kirby.
 8 *Kirbyi*, Lec.
 ORSODACHNA 1 *Childreni*, Kirby.
 2 *atra*, Ahrens.

Continued from page 204.

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VOL. III.

WILLIAM COUPER, Editor.

We cannot supply complete sets of vol. I of this journal—some of the numbers are exhausted.

CAUSES OF RARITY IN SOME SPECIES OF INSECTS.

Entomologists know that some species of insects are generally few in individuals, while others are numerous. Those which are useful to man, and have been, so to speak, domesticated by him, are, of course, kept up in as large numbers as possible, by the care and protection bestowed upon them. But the rest are left to the care of nature, and in the balancing of the great system of life, are subject to various influences, which affect them injuriously or otherwise. An enquiry into the causes which act in reducing their numbers would be both interesting and instructive, particularly in the case of those species which are *always* rare. Of course, some of these causes are easily discovered, but others, which may still be important, are obscure and difficult to trace out. For instance, a species may be rare, owing to the scarcity of its food plant. We cannot expect to find an insect, which may be confined to a single food plant, abundant where that plant is scarce. And an abundant species may be rendered rare in a given locality by the diminution of its food plant, say by the increase of cultivated ground, or by fire, &c. The following illustrates the point: The Gomin swamp, a well known collecting ground, close to the city of Quebec, is, or was, a breeding place of *Chionobas jutta*, a Labrador butterfly, which is not found in any other place within twenty miles of that locality. During the past fifteen years the swamp has been largely trenched and drained, and the butterflies have become scarce, no doubt owing to the loss of the food plant, which is probably some lichen or moss growing there. Another cause of the scarcity of some insects is their liability to parasitic attacks. The beautiful moth, *Samia Columbia*, might be given as an instance of this. Mr. S. I. Smith, the describer of the species, says in his paper, "This spe-

cies seems to be infested by an unusually large number of parasites, since, out of more than twenty cocoons, I have succeeded in raising but three, nearly all the rest having been destroyed by ichneumons and other parasites. Its remarkable rarity is, perhaps, due to this fact." I may add that collectors in Canada have had a similar experience with this moth. Another case is that of *Pieris rapæ*, which threatened to be a real scourge to the country, but has been reduced within reasonable bounds by the assistance of the insect parasites preying upon it. A third cause, particularly in the case of noxious insects, is the efforts made by man to extirpate those which destroy his crops or injure him in other ways. These efforts sometimes make an injurious insect rare, but no insect has become extinct from this cause, as far as we know, nor is it probable that such will ever be the case. Among causes more remote than the above mentioned, and more difficult to trace, are variations in climate, and in the seasons, as compared with one another. The way in which insects are affected by different conditions of the atmosphere, and by hot and cold seasons, has not been thoroughly studied as yet. In some years, for example, the Lepidoptera are much more numerous than in other years. Their abundance, or the opposite, is no doubt dependent in a great measure on the weather of the preceding summer and winter, as well as on that of the passing season. And what may be favorable weather for the Lepidoptera may be unfavorable for insects of other Orders. The knowledge of what constitutes favorable conditions for the increase of noxious insects would be of practical value to the agriculturist, and is a subject worthy of the study of our entomologists. Another cause of the intermittent abundance and scarcity of some species is to be found in their migratory habits. In the case of the locust, this is evident to all. Some of the butterflies, belonging to the families PIERIDÆ NYPHALIDÆ and DANADÆ also have this habit. Some years *Pyrameis cardui* or *Vanessa I-album* will be plentiful about Montreal, and then for a series of years will be exceedingly rare. The explanation of the mystery probably is that a large number of the insects have migrated to the locality during

the season when they were abundant. The chief interest of the subject, however, centres in the fact that some species are *always* rare. Sometimes this may be partly accounted for by the scarcity of the food plant, or by their being subject to attacks of parasites to an unusual degree, but still there may be other reasons. Are such species dying out? And will they in a comparatively short time become extinct from purely natural causes? It is generally admitted that all animals receive at birth a vital impetus, sufficient to ensure their living for a certain period of time, which varies in length according to the species. That is, when not tainted by hereditary disease. This impetus carries each individual through a certain progress of growth, maturity and old age, provided accident or fatal illness does not intervene. In the case of man, this period is about seventy years. Yet we know that many a man, blessed with a vigorous constitution, is as strong and healthy at eighty as others are at sixty, a result due in a great measure to a difference in inherent vitality. This is the case with all animals, including insects. The latter live out their allotted time and die of old age, just as men do. Sir John Lubbock describes the death of his pet wasp as being evidently from this cause. And here, I may say that the Hymenoptera have among them insects which live longer than any other in the perfect state. Sir John Lubbock has had ants seven years old in his formicaries. Now, as there is an individual vitality in animals, giving to each a certain life period, which varies according to the species, may there not also be a specific vitality? May not species, as well as individuals, have an allotted time, and grow old and die? If such is the case, insects would give the best opportunities of studying the subject. The rapidity of the changes they pass through, and the quick succession of generations, would lead us to expect that, in a comparatively short time, many species might run their course, and become extinct from mere loss of specific vitality. The speculation is an interesting one, but its value will not be proved for a long time to come. I lately met, however, with an item in an old number of the "Zoologist," (page 7095) which seems to have some bearing on the subject. It is a communication from Dr. Wallace to the Entomological Society of London, and reads as follows:

Remarks on the occurrence of Rarer British Sphingidae.

"The fact that in many female Sphingidae

captured in Great Britain and Ireland, in the autumn months, no *ova* have been found, induces the question as to whether some species may or may not be continuously indigenous. Many think that the absence of *ova* in the female is merely a question of time, as in the case of *A. atropos*, the females of which, notoriously devoid of eggs in the forced autumn specimens, are found in June depositing *ova*, whence the brood is perpetuated. Others maintain that it is a question not of time only, but also of place; for taking *S. convolvuli*, females of which are constantly taken in the autumn months, almost invariably without eggs (in 1846 and 1859 the species occurred most freely; one individual took nearly fifty specimens in 1859, all the females of which were destitute of *ova*). In this case either a female is hatched in the autumn with eggs, hibernates and deposits *ova* in the spring, or emerges in the spring from the *pupa*, or else specimens fly over from abroad and deposit *ova* in this country. I would ask has *S. convolvuli* ever been taken or observed in the spring or early summer in this country, and if so in what condition or of what sex? Are we to look for a development of females of *D. lineata* without eggs, in the autumn months, if a hot summer intervenes? A series of observations carefully made as to time, place, condition, sex, and also as to the complete development of sexual organs of any or all of the rare Sphingidae, would help to resolve the question. I commend it to the attention of entomologists." The interesting fact here stated is, that numbers of females among the rarer Sphingidae in England, taken in autumn, are destitute of *ova*, and consequently incapable of continuing the species. Dr. Wallace seems to imply that hot weather is a cause of the phenomenon, the absence of *ova* being a result of the forcing process. May there not be other and more important causes working with this to bring about such a remarkable result? From what we know of the development of insects, the effect of an abnormal degree of heat, (within certain limits) on the *pupa*, is merely to hasten the appearance of the *imago*, and not to interfere with the perfection of its organs. It seems probable, therefore, that this failure in the due development of these most important organs is owing to a weakness in the specific vitality of these moths, tending to their complete extinction. A strong instance is that of *S. convolvuli*. Dr. Wallace asks if it has ever been taken in the

earlier part of the year. Newman gives September as its regular time of appearance. Yet many females of this species, at their regular time of appearance, are found destitute of *ova*, and the inevitable consequence is its rarity, and possibly its dying out, at least in England, unless (as intimated by Dr. Wallace) it is kept up by fresh specimens flying over from abroad. There is another cause of the rarity of some species, but its mode of operation is difficult to discover. Sometimes the introduction of an insect from another country, if it become abundant in its new *habitat*, will affect injuriously a native species, generally one allied to the species introduced. It is the general opinion of entomologists in the Province of Quebec, that since the acclimatization of *Pieris rapæ*, the native *Pieris oleracea* has become scarce. The newcomer seems in some mysterious way to have usurped the place of the other species, and driven it away from places where formerly it was abundant. How this has been accomplished, however, we cannot tell.

G. J. BOWLES.

THE HUDSONIAN CHICKADEE.

(*Parus Hudsonicus*.)

The true home of the Hudson Bay Tit, as this species is generally called, is in the more northern parts of the continent, in Labrador and the Hudson Bay region, with a range in those latitudes from the Atlantic to the Pacific; though at the east it is met with much farther south than in the middle or western sections. It is a resident of Nova Scotia and New Brunswick, breeding in both Provinces, where, though not abundant, it is far too common to be called rare, though it is more frequently met in winter than at other seasons. According to Mr. Everett Smith it is a common resident of the interior eastern and northern portion of Maine. Mr. Harry Merrill writes me that he has not known it to occur near Bangor, nor is it given in Mr. Nathan C. Brown's catalogue of Portland species, but there are records of a few being taken in New Hampshire, Massachusetts, and Connecticut. Mr. LeMoine in *Les Oiseaux du Canada* mentions it as a rare species (*plus rare en Canada*), and it certainly is along the entire southern section of the western Provinces, for Mr. Wintle does not appear to have found it near Montreal, nor is the name in the Saunders-Morden list, nor in Mr. McIlwraith's old list of Hamilton

species. Professor Macoun has not placed it in his partial list of Belleville birds, nor did he find the bird in the Grand Valley of the Assiniboine. It is not given in the catalogue of the Ottawa Field Naturalists' Club, though in the copy before me the name has been penned in by one of the members in place of *rufescens*, the latter being an obvious error as that species was discovered by Townsend on the Columbia River, and it has never been taken north or east of that region. But this is an error easily made unless the *habitat* of the two species is considered, their plumage being similar.

Of the eighteen species of the *Parinæ* found in North America the most widely distributed and the best known is the Black-capped (*P. atricapillus*), the type species of the family. This bird is found in all suitable localities along the southern borders of the Dominion (as well as much further south) from the Atlantic to Manitoba. In the latter Province and across the Plains to the Rockies it is replaced by *septentrionalis*, which Mr. Ridgway says "may be looked upon as simply a long-tailed western variety of the common species." Beyond the Rockies this is again replaced by still another variety, named by Baird *occidentalis*. Of the Hudson Bay Tit no variation in the western specimens has as yet been recorded. But it is in form and coloration, only that the species of the family exhibit any marked differences, for no matter what name they bear, nor where they make their homes, you will find them the same restless, merry, sociable pygmies with all the familiar habits of the Black-cap. Their songs also bear a strong general resemblance—if the jingling chant in which they carol their joy can be called a song—for whether the singer be he of the black tuft whose voice is heard on the banks of the Rio Grande; or *Carolinensis*, who helps to swell the chorus which comes up from "the Land o' Dixie;" or our own brown-capped hero, whose tiny throistle flings a welcome to the sun as its light breaks upon the hills of the far north, or be he whatever member of this family he may, the theme of his song is much the same jaunty *teha-dee-dee-dee* as rings through our Canadian woods the whole year long. The song of the Black-capped and the Hudsonian are especially similar, and their general appearance and their manners in the field, particularly the latter, are so alike as to make their exact identification rather difficult; yet even in

their actions and their numerous notes there is a difference, though I confess it is not easily defined, but after some study their identification becomes unquestionable. In the northern bird the crown of black edged with white, so conspicuous in the congener, is replaced by a crown of rich brown edged with ashy; the throat also is brown, and the entire upper parts are more brown than ashy. Then the head does not appear so round, so much like a ball of down as the Black-cap's does, and the whole plumage partakes less of the fluffy character. The feathers appear firmer and set close to the body giving the bird, in a slight degree, a trimmer and more warbler-like look. And just as this additional stiffness in the contour feathers increases the dignity of the bird's appearance so does a slight stiffness in his movements add to the dignity of the bird's manners—if dignity is at all applicable to a bird who will persist in hanging to a limb with his head downwards and acting otherwise like a romp-loving school boy just after a circus has passed his way. For like all the race the Hudsonian lives principally on the eggs and larvae of insects, which it finds in the crevices of the bark of trees, and in hunting after these it performs a variety of amusing and wonderful gymnastic feats, though I have never seen one attempt to climb the trunk of a tree as do their next of kin, the creepers. But in all these movements this species exhibits just a little less of that rollicking style—that free abandon which is so pronounced in the antics of the Black-cap. And in the songs of the two you can trace a difference of a somewhat similar character; that of the Hudsonian lacks the extreme sweetness and smoothness of its cousins. The voice is harsher and the syllables are delivered more distinctly and more deliberately. But with all their efforts to affect boarding-school airs they must be rather genial fellows, for in the autumn and winter troops of six or eight are met together and generally in company with as many Black-caps and a small contingent of Kinglets. Tree Sparrows sometimes join the party, and but a few days ago I met such a troop “doing” the rounds of the trees in one of the public squares of this city with a pair of Downy Woodpeckers following close in their rear.

The Hudsonians chatter away as they hunt for their food from branch to branch and tree to tree, but they do not always sing their full song; more frequently the first note heard

from an advancing flock is something like *tsay-day-day*, the last syllables rather lengthened or a sharper, quicker *te-teet-chee-chee*, and occasionally a guttural *tse-pu-pu-pu*. They have numerous other minor notes with which they fill in the intervals, and one, which they use chiefly when resting under the cover of heavy evergreen foliage, and in such places as they select for sleep, is like the thin *tsip* of a Kinglet. While on their foraging expeditions, and indeed at all times, they exhibit no symptoms of shyness and appear quite indifferent to the presence of mankind, occasionally pausing to gaze at an inquisitive intruder with a comical “who-are-you-looking-at?” air, and probably following this by some performance around a limb, as if to show off their athletic capabilities.

In the spring these gay companions separate, each taking a mate, and starting boldly into housekeeping affairs. It has been stated that the Hudsonian Chickadee selects a deep forest for the site of its nest, and this may be the general rule, but of the four nests that I have seen neither were placed in any such seclusion. The one most carefully hid away was in a rather thick swamp, but was quite close to the outskirts of a village and within a hundred yards of a much used highway; two of the others were in open pastures through which children played daily; while the fourth was in a telegraph post within a hundred yards or so of a railway station. During last season I was enabled to examine two nests of this species before they were removed from their original positions, one of these was found near Edmundston, not far from the Quebec border, by Mr. H. A. Purdie, of the Nuttall Club, Cambridge, and the other was discovered by Mr. James W. Banks within an hour's walk of this city. These two nests were so nearly alike both in position and construction that a description of one will apply equally well to either. They were placed in decayed and weather-beaten stumps (apparently spruce or fir), some three feet high and five inches in diameter, but unlike the Black-cap, who makes an entrance from the *side*, these builders had entered the stump from the top, beginning with a hole of about two inches diameter, which size was maintained for some six or eight inches, when it was increased gradually to about three inches, and this width was continued to the base of the excavation some twelve to fourteen inches from the top. At the bottom of this cavity, under the nest proper,

were two mats or platforms. The first or lowest of these, which was about one inch and a half thick, was composed of dry moss firmly packed, and upon this was placed another such mat made of the inner fur of the common hare, firmly felted into a compact mass. Upon this latter rested the cup-shaped nest made of the same felted fur and of such precise and graceful form as to have been no discredit to a more cultured artist. The walls of the nest were two and one-half inches high and half an inch thick. There was no other material used as a lining, but the interior had a soft woolly surface not observable on the outside of the walls. There were five young in one nest and six in the other; and both broods were in much the same stage of development, although the Edmundston nest was seen on June 14th, and the St. John nest on July 1. It has not been my good fortune to see the eggs of this species, but Mr. H. B. Bailey, of the Linnean Society of New York, who took several nests at Stewiacke, in Nova Scotia, during June, 1881, told me that the eggs differed but very slightly from those of the Black-capped. They are much the same size and shape, perhaps a shade smaller, but with the same white ground and irregular brownish-red and pinkish markings. I have seen it stated that they lay as many as eight and ten eggs, but I have never seen more than seven nor less than five young in the nests that I have examined. With all their reckless rollicking ways the Hudson Bay Tits make most devoted husbands and fathers, and though generally in a merry mood can be fierce when occasions demands and are always bold and courageous, as many an intrusive rodent and feathered egg thief has discovered; yet I have seen nothing in their actions to indicate the probability of the family fights noted by Wilson, nor of the display of fierce temper when despoiling their nests that has been mentioned by Audubon, Dr. Brewer and others, and I have had some opportunity to observe the latter. For example, my friend Purdie is kind and tender-hearted to a fault, and when he saw that his Hudsonian nest was filled with young he shrank from any unnecessary sacrifice of bird-life; but he is an enthusiastic collector, and he wanted that nest. After consulting, we determined to open the stump, take out the nest and replace it with one made of cotton-wool. This was successfully accomplished, but between our desire not to injure the nest, and the stubbornness of the stump, there was considerable time absorbed in the

operation; and all this time the parent birds hovered about us with a patient submission to the inevitable that was almost sublime. Their movements had lost the merry reckless dash so characteristic of their race, and while they passed fearlessly from bough to bough close around us, watching us with intense interest, they uttered only a few anxious notes and maintained a calm and dignified bearing that was unimpeachable.

MONTAGUE CHAMBERLAIN.

St. John, N. B.

BIRDS OF WESTERN ONTARIO.

SIR,—I have been very much interested in the January number of your paper and really delighted with the ornithological contributions it contains, but more particularly with the correspondence of Mr. McIlwraith of Hamilton, containing some careful criticisms on the list of birds of Western Ontario, given by Mr. W. E. Saunders and myself. Concerning the wintering of *Regulus calendula* in Ontario. I can say but very little, as I did not positively observe it myself; I never hunt much among the evergreens along the Thames, where it is said to winter. The Great Northern Shrike (*Lanius borealis*) is scarce here in winter, but sometimes it is common in October, remaining until after the first storms of snow, when they generally disappear. I have seen only one specimen of the species this winter, that was early in November, before all the black snowbirds and tree sparrows had departed. One of the last named, the shrike was pursuing when I observed it. I have never met with the adult of this species in summer, but in the month of August, 1880, a young man brought me a Marsh Hawk (*Circus hudsonius*), which I bought and asked him to procure others for me. In a few days, the same party brought me five young of *L. borealis* which were reared near where he lived. Their plumage contained many pin feathers, consequently I did not preserve them, but their large size and breast markings were, in my opinion, unmistakable proof of the species. I was told the parent shrikes were very shy and a few weeks previous had killed some very young chickens belonging to a farmer near by.

JOHN H. MORDEN.

Hyde Park, Ont.

NOTES ON THE BREEDING OF THE
RED-HEADED DUCK AT LAKE
ST. CLAIR.

Some of your readers are perhaps aware that during the spring of 1882, Mr. Herbert Keays and the writer were collecting specimens of natural history at Mitchell's Bay, Ontario. Perhaps some of the readers of this article may have enjoyed themselves at the little village of this name, as it is the resort of numerous sportsmen during the shooting season. For the benefit of those who may not have visited the spot, I will give a brief description of the localities in which we collected the specimens I intend to describe. The village is situated about half a mile from the shore, and at about the same distance inland, is a dense forest composed chiefly of elm and other soft wood trees. Here the surface of the ground is not more than three or four feet above the level of the bay, but sloping gradually to the water's edge. On the north and south of the village the marsh extends much further from the forests verge and partly encloses the body of water known as "Mitchell's Bay," which is about four miles in extent each way and very shallow, being not more than ten feet deep anywhere. The southern projection of marsh is called "Big Point Preserve," the northern boundary of the bay, "Mud Creek Preserve," and extends to the "Sny" as the outlet of Sydenham River is called. The marsh beyond the river called "St. Ann's Island," is an Indian Reserve, but is now leased and held as a game preserve by a club of sportsmen. Scarcely any part of this island or the adjoining marsh are much above the level of the water, and wherever the water does not form ponds, bays or channels, wild rice, coarse grasses and rushes cover the flats in freshest green. Amid the wiry grass, wild pea vines twine and bloom and the surfaces of the shallower pools are covered with the leaves of lilies and other aquatic plants. During our stay in this place we lived in a scow belonging to Dr. Garnier of Lucknow, to whom I am greatly indebted for many favours. My stay in this delightful spot will ever be dear to memory; sitting at my work—at early lamp-light—listening to the water-fowl and the splashing of the waves against our scow. No lover of nature could visit this spot during the month of May or June without being impressed by its beauties, and to us it was a collectors paradise. There was not a moment of the day

when the lively notes of some bird could not be heard, and sometimes the noise was astonishing; in the evening, when the sun was sinking out of sight, perhaps a loon would start its wailing cry and apparently, at once, every feathered inhabitant of the marsh would join with their own peculiar notes, but the Florida Gallinule, *Gallinula galatea*, was by far the most vociferous. Those who have never heard such an uproar can scarcely understand a written description. Imagine the music that would be made by hundreds of gallinules yelling on every side; the quacking of ducks, piping of rails, crying of loons and the indescribable notes of hundreds of marsh wrens, coots and grebes; the croaking of thousands of bull-frogs to say nothing of the hum of myriads of mosquitoes, and we find a din unparalleled. The first nests and eggs I shall describe are those of the Red-headed Duck (*Aethya Americana*). Early on the morning of May 27th, we started in a canoe to the southern extremity of St. Ann's Island in search of nests. Mr. Keays was wading in water too shallow to pole the canoe in; I paddled about until we took nest after nest of coots, gallinules, grebes, black terns, red-wings, rails &c. A female red-head was then observed by my friend, swimming quietly away among the reeds; he immediately started to search for the nest, which he knew must be near; a few minutes later, my ears were saluted by a shout that clearly indicated success. I lost no time in reaching the place and found him stooping over the nest and handling the eggs in a perfect ecstasy of delight. The nest was placed in six or eight inches of water, among coarse grass and flags, and was composed of those weeds of the previous year, very bulky, being about sixteen inches in depth and diameter; it was built abruptly out of the water, except on one side which had a regular slant of about a yard in length and which led to a passage among the weeds going to the open water. The internal diameter of nest at top was nine inches and the depth five inches. The eggs, ten in number, were of a bluish drab colour; they were uncovered when found, and in an advanced state of incubation; they varied in size, measuring thus, $1\frac{3}{4} \times 2\frac{3}{8}$, $1\frac{3}{4} \times 2\frac{1}{2}$, $1\frac{1}{2} \times 2\frac{1}{2}$, $1\frac{3}{4} \times 2\frac{1}{2}$, $1\frac{3}{4} \times 2\frac{1}{2}$. While we were taking the eggs, the female duck came twice and flew around us, and when we were a little distance from the place she alighted in the pond and swam rapidly to the nest; we again approached, when she took wing and in a few

minutes returned with her mate, both circling several times around us, quacking and showing much solicitude. Soon after, having taken as many eggs as we could blow during the remainder of the day, we returned to our lodgings. The second nest of the same species was discovered June 22nd; the nest was placed on a log among drifted weeds, &c.; the eggs as in the first instance, were uncovered and smaller than the first set discovered; they were six in number, and incubation had commenced. It is my opinion that the few specimens of *Aethya Americana* breeding at Mitchell's Bay, were wounded birds, unable to leave in spring, when the bulk of the species had left for northern regions, and I think this will account for their late breeding. It is my intention to send you my experience among other birds of the St. Clair marshes, and hope to hear from others who like myself, take a pleasure in this pursuit.

JOHN H. MORDEN.

Hyde Park, Ont.

COLEOPTERA FOUND IN THE PROVINCE OF QUEBEC.

BY WILLIAM COUPER.

SYNETA ferruginea, *Germ.*

LEMA 1 melanocephala, *Say.*

2 trilineata, *Oliv.*

3 solani, *Fabr.*

CRIOCERIS asparagi, *Linn.*

AXOMAEA laticlavata, *Forst.*

BABIA 4-guttata, *Oliv.*

MONACHUS saponatus, *Fabr.*

CRYPTOCEPHALUS 1 Schreibersii, *Newm.*

2 mamifer, *Newm.*

3 sellatus, *Suffr.*

4 lituratus, *Fabr.*

5 4-maculatus, *Say.*

6 venustus, *Fabr.*

7 dispersus, *Hald.*

8 congestus, *Fabr.*

9 guttulatus, *Oliv.*

10 auratus, *Fabr.*

PACHYBRACHIS 1 luridus, *Fabr.*

2 othonus, *Say.*

3 atomarius, *Mels.*

ADOXUS vitis, *Fabr.*

XANTHONIA 1 decemnotata, *Say.*

2 pilosula, *Mels.*

3 Stevensii, *Baly.*

HETERASPIS pubescens, *Mels.*

CHRYSOCHUS 1 auratus, *Fabr.*

2 cobaltinus, *Lec.*

TYPOPHORUS tricolor, *Fabr.*

PARIA 1 4-notata, *Say.*

2 aterrima, *Oliv.*

3 laevicollis, *Crotch.*

METACHROMA quercatum, *Fabr.*

COTASPIS 1 brunnea, *Fabr.*

2 praetexta, *Say.*

3 tristis, *Oliv.*

4 convexa, *Say.*

CHRYSOMELA 1 clivicollis, *Kirby.*

2 10-lineata, *Say.*

3 elegans, *Oliv.*

4 multiguttis, *Stal.*

5 Philadelphica, *Linn.*

6 multipunctata, *Say.*

GASTROPHYSA 1 polygoni, *Linn.*

2 formosa, *Say.*

3 cyanea, *Mels.*

PRASOCURIS Phellandrii, *Linn.*

PHYLLODECTA vulgatissima, *Linn.*

PLAGIODERA 1 lapponica, *Linn.*

2 tremulae, *Fabr.*

3 viridis, *Mels.*

4 chochlearia, *Syll.*

CERATOMA caminea, *Fabr.*

PHYLLOBROTICA discoidea, *Fabr.*

LEPERUS meraca, *Say.*

DIABROTICA 1 vittata, *Fabr.*

2 13-punctata, *Oliv.*

GALERUCA rufosanguinea, *Say.*

GALERUCELLA sagittaria, *Gyll.*

MONOXIA obtusa, *Lec.*

TRIRHABDA 1 Canadensis, *Kirby.*

2 virgata, *Lec.*

EDIONYCHIS 1 thoracica, *Fabr.*

2 petaurista, *Fabr.*

3 quercata, *Fabr.*

DISONYCHA 1 alternata, *Lec.*

2 punctigera, *Lec.*

3 glabrata, *Fabr.*

4 collaris, *Fabr.*

5 triangularis, *Say.*

GRAPTODERA 1 bimarginata, *Say.*

2 chalybea, *Ill.*

BAPTOPHILA spuria, *Lec.*

BELAMIRA scalaris, *Say.*

ORCHESTRIS 1 lepidula, *Lec.*

2 vittata, *Fabr.*

6 bipustulata, *Fabr.*

DIBOLIA aerea, *Mels.*

SYSTEMA 1 Hudsonias, *Forst.*

2 frontalis, *Fabr.*

3 collaris, *Crotch.*

4 marginalis, *Ill.*

ORTHALICA capallina, *Fabr.*
 CREPIDODERA 1 helxines, *Linn.*
 2 atriventris, *Mels.*
 CHÆTOCHEMA denticulata, *Ill.*
 PSYLLIODES punctulata, *Mels.*
 BLEPHARIDA rhois, *Forst.*
 ODONTOTA 1 scapularis, *Oliv.*
 2 bicolor, *Oliv.*
 3 scutellaris, *Oliv.*
 4 rosea, *Web.*
 MICRORHOPALA 1 interrupta, *Couper.*
 This species is in the collection of the
 Laval University of Quebec. It was found
 near Chateau Bigot, north of that city.
 2 excavata, *Oliv.*
 CHELIMORPHA cassidea, *Fabr.*
 COPTOCYCLA 1 aurichalcea, *Fabr.*
 2 guttata, *Oliv.*
 3 plicata, *Boh.*
 MEGILLA maculata, *DeGeer.*
 HIPPODAMIA 1 LeContei, *Muls.*
 2 convergens, *Guer.*
 3 13-punctata, *Linn.*
 4 glacilis, *Fabr.*
 5 parenthesis, *Say.*
 ANISO STRICTA strigata, *Thunb.*
 COCCINELLA 1 trifasciata, *Linn.*
 2 9-notata, *Herbst.*
 3 5-notata, *Kirby.*
 4 tricuspsis, *Kirby.*
 CYCLONEDA sanguinea, *Linn.*
 ADALIA 1 frigida, *Schn.*
 2 2-punctata, *Linn.*
 ANISOCLAVIA 14-punctata, *Linn.*
 ANATIS 1 15-punctata, *Oliv.*
 2 Canadensis, *Prov.*
 MYRIA pullata, *Say.*
 PSYLOBORA 20-maculata, *Say.*
 CHILOCORUS bivulnerus, *Muls.*
 BRACHYACANTHA 1 dentipes, *Fabr.*
 2 ursina, *Fabr.*
 3 10-pustulata, *Mels.*
 HYPERASPIS signata, *Oliv.*
 SCYMNUS 1 candalis, *Lec.*
 2 tenebrosus, *Muls.*
 MYCETINA 1 testacea, *Lec.*
 2 perpulchra, *Newm.*
 ENDOMYCHUS biguttatus, *Say.*

PHYMOPHORA pulchella, *Newm.*
 MYCOTRETUS sanguinipennis, *Say.*
 CYRTOTRIPLAX 1 humeralis, *Fabr.*
 2 unicolor, *Say.*

TRIPLAX thoracica, *Say.*

This list numbers about 1012 species found to date in the Province of Quebec. In "The Canadian Entomologist," between the years 1868-'72, Mr. J. Pettit published a list of 1297 species of Coleoptera, collected by himself in the neighborhood of Grimsby, Ontario. Many additional species could be added to the Quebec list, as very little has been done in collecting the small forms of CURCULIONIDÆ or weevils. I have made no attempt at classification, my object being to make it useful as a future reference to young beginners in the study of this branch of Entomology.

ENTOMOLOGICAL REPORT FOR 1882.

The Report of the Entomological Society of Ontario for 1882, is fraught with interesting and instructive information for the Agriculturist and Entomologist. The subjects are treated in an easy, pleasant way, that those interested may read and learn. When I was a youth, studying insects, books containing descriptions and life histories of species inhabiting Canada could not be obtained for love or money. In 1843, there were a few systematists and students in the United States, but the papers then published were obscure to a beginner. Now these reports are of inestimable value to young Canadian students in Entomology. The papers are largely illustrated by excellent electrotypes of injurious and beneficial insects belonging to the various Orders. The report contains the President's address delivered at the Montreal meeting. Six of the papers have been written by our entomological neighbours, and ten by Canadian writers. This is proper, as it should be; entomological reciprocity benefits both countries, and these mutual communications are doing good.—C.

THE

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AND

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1883.



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THE CANADIAN SPORTSMAN AND NATURALIST.

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VOL. III.

WILLIAM COUPER, Editor.

OWLS.

Two beautiful specimens of the rare cinereous owl were sent to me in March. One was a female shot at St. Remi, the other a male, secured in the neighbourhood of Huntingdon, Que. Two owlets of this species were procured about three years ago, from a nest found in a tree in the new settlement of Ponsonby, a wild region not far from Montreal. From these facts, it is evident that the great cinereous owl is becoming more resident in the woodlands of Quebec. Formerly it was considered a visitor during winter, like the snowy owl, coming from the lands inhabited by the leming. Although it is only of late years that this owl was discovered in the latitude of Quebec during summer, we have no authentic knowledge of its habits during the nesting season. Why is this powerful bird so rare, while the barred owl, a smaller species, is generally abundant? The young of the latter were found on the ground in a forest near Quebec, and the adult birds are common in our woodlands at all seasons. There appears to be a great difference regarding the positions whereon a few of our owls make their nests. Mr. W. G. A. Brodie says "that the long-eared owl and the snowy owl nest on the low trees in Manitoba," while we have been informed by other observers that the latter species deposits its eggs in a nest on the ground. The information that the snowy owl constructs its nest on trees in Manitoba is new and interesting to us, as it was formerly supposed to return to the far north to bring forth its young. The Great North-west is, however, becoming settled by intelligent observers of nature, and in a few years we will doubtless obtain a clear and correct record of its *fauna* and *flora*. The barred owl is probably the only American species having dark eyes. Why is the bird thus an exception in its class? The other owls possess bright yellow eyes, and they have also the power of dilating and contracting their black pupils to suit the glare of light in which they may be placed. Generally speaking the yellow-eyed owls are not so common (at least in the eastern

portions of Canada) as the dark-eyed species. Those possessing the yellow iris may possibly range over a larger extent of territory, while the barred owl may be more local in its *habitats*. The great Virginian owl is not in any way a common species, especially near the habitations of man; the same may be said of the hawk, Tengnalm's, saw-whet, the long and short-eared owls which have a yellow iris to their eyes. These birds generally gloar and stare at a person when approached in day-light. We would be pleased to have the opinions of ornithological students regarding the above questions, with remarks on the peculiarities which may have been noticed in the economy of owls—for instance—stratagem or modes by which they procure their food; giving also statements regarding the correct use of the black-bordered transparent membrane so conspicuously connected with their eyes.—C.

NOTES ON THE NATURAL HISTORY OF MANITOBA.

BY W. G. A. BRODIE.

(Read before the Natural History Society of Toronto.)

One of our characteristic rodents is the "Sand Rat," northern pocket gopher, the *Thomomys talpoides*, Rich.; it is about the length of a house rat but heavier and of a more clumsy build; usually the color is dirty grey varying to nearly black. The cheek pouches open on the outside of the mouth, are hairy inside and will hold a handful of grain. The ears are short, placed in the centre of a dark patch and the sense of hearing is acute. The incisors are large and sharp, the molars sharp around the edges. The legs are short and the toes have long claws and they are good diggers. They are strictly nocturnal in their habits but this is of little value in the struggle for existence for their nocturnal enemies are many—owls, coyotes, foxes and badgers. Another is the northern chipmunk or *Tamias asiaticus*, Gmel; it is common in all wooded sections, is very variable but easily distinguished from its near congener in Ontario the *Tamias striatus*, Linn. The ground squirrel, *Spermophilus Richardsoni*, Sabine,

and the gopher, *Spermophilus tridecemlineatus* Mitchell, are very numerous and the prairie is everywhere riddled with their burrows. The pretty jumping mouse *Zapus Hudsonius*, Coues, is common wherever there is brushwood. We have several species of *Arvicola*. *Arvicola riparius*, Ord. *A. riparius*, var. *borealis*, Rich. *Arvicola xanthognathus*, Leach, and some undetermined forms. They abound everywhere except on sandy plains, and supply an abundance of food for diurnal birds of prey. The flying squirrel, *Sciurus volucella*, Pallas, or rather *S. volucella*, var. *Hudsonius*, Gmelin, is common in wooded sections; they differ very little from Muskoka specimens, except that the fur is longer and denser. We also have the red squirrel, *Sciurus Hudsonius*, Pallas, where there is large timber; they do not differ very much from those you find down the glen in St. James' Cemetery. The northern hare, *Lepus Americanus*, Exl., var. *Americanus* is also common, preferring wooded sections to open prairie. The western porcupine, *Erethizon dorsatus*, Linn. var. *eximius*, is often found on open prairie a long distance from this. As a check on the increase of these plant eating animals we have a number of carnivorous species, the coyote, *Canis latrans*, Say, common everywhere; the timber wolf, *Canis lupus*, Linn., found in wooded sections; the red fox, *Vulpes vulgaris*, Flem., of which there are several varieties; the badger, *Taxidea Americanus*, Bodd., a fierce and greedy foe, also several species of the Mustelidae. The wild cat *Lynx rufus*, Raf., is occasionally seen but they are small and not at all formidable. The moose, *Alce Americanus*, Jard., the caribou, *Rangifer caribou*, Aud., the elk, *Cervus Canadensis*, Exl.; the reindeer, *Cervus Virginianus*, Gray.; the jumping deer, *Cervus macrotis*, Say., are all more or less common. The bear *Ursus Americanus*, Pallas, is represented by the usual varieties, black, brown and cinnamon. From Cypress Hills and along the Rockies, to far up into the Peace River section is the haunt of the grizzly and whoever desires a skull must hunt for it there. This country seems particularly favorable to birds. I have seen nearly all the birds I knew in Ontario and many that are not found there, or only as occasional visitors. One reason for the abundance of species here is, I think, that in their spring migrations northward they keep in the valley of the Mississippi and being hemmed on the east by the great lakes and on

the west by the Rocky Mountains they have an uninterrupted course to Manitoba and the North-west. The security they have enjoyed for ages, during the breeding season is no doubt a great attraction, and accounts for the wonderful abundance of individuals, and the vast tracts of land—not fit for settlement—will afford cover for the most timid for years to come. The advantages here of studying bird life, of collecting specimens is quite to be envied; indeed so many birds build here that last summer, I am sure, I could have collected a waggon load of eggs of many species. As a general rule, the trees here are small, and nests easily got at. I have seen dozens of nests of the common buzzard *Buteo Swainsoni*, Bon., within easy reach from the ground in oak shrubs and poplar thickets. The nests of the brown thrush, *Harporhynchus rufus*, Cab., are especially numerous in all low thickets and just as up the Don or down the railway track from Toronto, the male bird sits on the topmost branch and pours out his cheering love song with vigor and variety. The veery, *Turdus fuscescens*, Bd., the wood thrush, *Turdus mustelinus*, Bd., and the robin *Turdus migratorius*, L., are all very common, the robins especially so; they sometimes remain until quite late in the fall. I got a specimen last October after snow had fallen. Warblers, kinglets and wrens abound and their nests are seen everywhere, when the leaves are off the trees. The ruby crowned kinglet, *Regulus calendula*, L., is quite common and in early spring when the azure bloom of the sand flower covers the prairie and its fragrance fills the air, when half opened leaves deck trees in the freshest green, the cheery musical song of this pretty little bird is heard as it darts among the willow blossoms. The chickadee, *Parus atricapillus*, L., remains here during the winter, and I have noticed with this as well as other birds that winter here, that the plumage is ample, soft and downy and that when it is cold they erect their feathers—apparently without effort—so as to appear much enlarged, presenting a greater depth of feather and of course a better protection from cold. The nuthatch, *Sitta Carolinensis*, Gmelin; the house wren, *Troglodytes aedon*, Vieil.; the longbilled marsh wren, *Cistothorus palustris*, Wilson, are common; the last around marshes and sloughs and in early morning, its peculiar note may be detected amid the choruses of red-winged black birds, the discordant laughing of mud hens, the trumpeting of the whooping crane, over

head, his long legs stretched out behind, as he wings his way to some favorite fishing ground. The shore lark, *Eremophila alpestris*, Boie., and the long-spur, *Plectrophanes lapponicus*, L., come very early in spring and remain until late in winter, but it cannot be said that they remain with us all winter, and I would here make the broad statement that all our birds are more or less migratory; that they all leave their breeding places and move southward as winter sets in, and that the birds found here in the winter breed north of us. The neat and substantial nests of the summer warbler, *Dendroica aestiva*, B. D., are found everywhere in willow scrub; the nests of the superb little redstart, *Setophaga ruticilla*, L., are also common. Last spring we shot a fine specimen of the butcher bird, *Collurio borealis*, Vieil., and laid it with some other birds on the top of the shanty; very soon we heard a noise and on going out saw a butcher bird tearing his dead relative to pieces. I found a nest of this species in a dense spruce tree last spring. The white-winged crossbill, *Loxia leucoptera*, Gmel.; the pine grosbeak, *Pinicola enucleator*, L. and the red-poll linnet, *Egiothus linarius*, L., are found here summer and winter; in winter, in small flocks, feeding on the ends of trees and shrubs, the hippos of the wild rose being the staple. A flock of about two hundred and fifty snow buntings, *Plectrophanes nivalis*, L., has been around the town for some days and they have done some damage to bags of grain laying about the station, pecking holes in them and feeding on the contents. The savanna sparrow, *Passerculus savanna*, Bon., the bay-winged bunting, *Loecetes gramineus*, Gm., the sharp-tailed finch, *Ammodorus caudacutus*, Gm.; the song sparrow, *Melospiza melodia*, Wils., and the snow bird, *Junco hyemalis*, L., all nest in the bluffs and on the open prairie. Here also is the towhee bunting, *Pipilo erythrophthalmus*, L., with his clerical coat, white vest, bright red eyes and sweet little main song, they nest on the ground in tangled thickets or near brush heaps. That queer family, the Icteridæ is well represented here; of the sixteen species found in North America, I have already seen nine, and all very common. There is no uniformity in their architectural abilities. The orioles build in trees, the most complicated and strongest nests, in fact are the best nest builders of all our birds; the rusty grackle, meadow lark and bobolink build on the ground a very poor but well concealed nest, while the cow bird

does not build at all, declining even the duties of housekeeping. They also differ very much in plumage; the oriole, crow blackbird, *Quiscalus purpureus*, Bart.; yellow-headed blackbird, *H. xanthocephalus icterocephalus*, Bon., and the meadow lark are very beautiful; the cow bird, *Molothrus ater*, Bodd., and the rusty grackle, *Scolecophagus ferrugineus*, Gm., very plain. Again the oriole, *Icterus Baltimore*, L., meadow lark, *Sturnella magna*, L., and the bobolink, *Dolichonyx oryzivorus*, L., are all more or less musical, while the rusty grackle, red-winged blackbird, *Agelaius phoeniceus*, L., and the cow bird make the most discordant skreekings. Again the bobolink and the meadow lark have hard, sharp pointed, woodpecker like tails, while in the oriole the tail is soft and square at the end. Altogether the Icteridæ are a motly lot and well worth attention and study. The common crow, *Corvus Americanus*, L., and the raven, *Corvus corax*, L. are common, so is the blue jay, *Cyanurus cristatus*, L., and the Canada jay, *Perisoreus Canadensis*, L., is common in every bluff. The king bird, *Tyrannus Carolinensis*, L., is here in full force chasing and annoying hawks as usual, and every summer night, thousands of whippoorwills, *Antrostomus vociferus*, Wils. contend with each other as to which can make the loudest and most rippling complaint. The night hawk, *Chordeiles Virginianus*, Gm., is also very common and I found a great many nests—o rather lots of eggs—for they make no attempt at nest building but lay in exposed places on the open prairie. The common kingfisher, *Ceryle alcyon*, L., is common along all our rivers and small streams, nesting as in Ontario. Of woodpeckers we have the hairy, *Picus villosus*, L., the downy, *Picus pubescens*, L., the black backed, *Picoides arcticus*, Sw., and the golden winged, *Colapetes auratus*, L., the three species first mentioned are found here all winter; the last leaves early in fall; they are very common; every dead stub is pierced with half a dozen of their nesting holes. The great horned owl, *Bubo Virginianus*, Gm., the long eared owl, *Otus vulgaris*, L., and the snowy owl, *Nyctale nivea*, L., are all very common, nesting in small trees, wherever found. The peregrine falcon, *Falco communis*, Gen., the most fierce and daring of all our hawks, is very common, nesting in bluffs and is the terror of the poultry yards. The sparrow hawk, *Falco sparverius*, is very common, nesting in woodpeckers old holes. The broad winged buzzard, *Buteo Pennsylvanicus*, Wils.;

the rough legged buzzard, *Archibuteo lagopus*, Brunn. abound everywhere. The turkey buzzard, *Cathartes aura*, L., is not uncommon but as yet I have no proof that they nest here. One of our characteristic birds is the prairie chicken or sharp tailed grouse, *Pediceetes phasianellus*, Baird.; it is abundant all over the prairie, builds on the ground by the edges of bluffs and lays about twenty rather small eggs; the ruffed grouse, *Bonasa umbellus*, L., is also common in the bluffs and nests just as in Ontario. The killdeer plover, *Egialites vociferus*, L., the least sandpiper, *Tringa minutilla*, Vieil., the snipe, *Gallinago Wilsoni*, Temm.; the woodcock, *Philohela minor*, Gray, are all quite common. The large and fine godwit, *Limosa Hudsonica*, Lath., is common, also the upland plover or quail, *Actiturus Bartramius*, Vieil., is very common, building in clumps of grass, and laying about five large spotted eggs. The two cranes—the sand hill, *Grus Canadensis*, L., and the whooping, *Grus Americana*, L., are common and their nests are often found. Wild geese are very numerous in spring and fall but usually breed further north. This is par excellence the country for wild ducks, they are more numerous here than robins are in Ontario. I have found the mallard, dusky duck, pintail, gadwall, widgeon, green-winged teal, blue-winged teal, shoveller, wood duck, red head, canvas back, buffle head, long-tailed duck, goosander, hooded merganser, all breeding here. The mallard and the teals are the most common and their nests are frequent along the margin of ponds, and in midsummer flocks of young ducks are seen sporting themselves in every pond. The white pelican, *Pelecanus trachyrhynchus*, Lath. is often seen and breeds around Shoal Lake and other localities to the north. I noticed a species of tern, *Hydrochelidon lariformis*? L., very common about ponds, hovering over the water and occasionally darting down and coming up with a water lizard. They make a great row when their nests are approached, flying around one's head and nearly striking. It is enough to scare one to see it coming swiftly through the air direct for one's face, with its mouth wide open and deafening one with its most unearthly screaming.

NESTS OF THE WILD MALLARD IN ST. CLAIR FLATS.

There are evidently several species of duck which reside and nest in the St. Clair Flats. Nests of some of these species have been so far

discovered. I have remarked a peculiarity in the building seasons which seems common to all wild ducks, especially when the male and female are swimming off in front of my boat, that the female is always the first to give signs of alarm, the male never takes wing first, but waits until his mate has started. The mallard is very noisy during its nesting season, and this is remarkable for some time before she commences incubation. The drake and duck are then restless, flying from place to place about the vicinity of the nest; both will then quack loudly while on the wing. I found two nests of the mallard (*Anas boschas*) last season. The first nest was discovered on May 23, 1882. I was in a canoe rounding a point of St. Ann's Island, when I heard a splashing of water behind where I passed, caused by a female *boschas*, acting in a strange way, as if wounded, making off from the nest, by partly swimming and attempting to fly, until about forty yards distant, she took wing and flew a few hundred yards, alighting in a pond. I thought if that duck has a nest in this locality, she has certainly exposed her treasure by her unnecessary mimicry. I then forced the canoe into the grass, and on stepping out to search, found its nest in a thick bunch of grass, which almost encircled and covered it so closely as to completely hide the eggs. The nest was on the highest part of the point, which was about twelve feet wide. The structure was not bulky, being constructed principally of fine dead grass. The lower portion was wet, and the eggs (nine in number) were not more than two inches above the water. The eggs are bluish drab; they were neatly hidden in the nest with soft down and fine dry grass. Average size $1\frac{3}{4} \times 2\frac{1}{4}$ inches. Incubation was advanced, but by making a $\frac{1}{4}$ inch hole, and with the use of an embryo hook and scissors they were saved for my cabinet. The second set of mallard eggs were obtained on the 5th of June, by Mr. Keays and myself from a nest found on Walpole Island, which is separated from St. Ann's Island, by Johnson's channel, one of the mouths of the River St. Clair. The place chosen was higher and dryer than that in which the former one was found, being situated about thirty yards from the channel. That morning's oological search with the use of the boat was successful, but in the afternoon, Mr. Keays was on shore hunting among the long grass, when a female mallard flew up a short distance from where he stood. After looking about a short time, the nest containing

three eggs was found. We concluded to leave it for a week in order to obtain a full set. Seven days later, on returning, we found only six, which were slightly incubated. The construction of this nest was similar to the former.

JOHN ALFRED MORDEN.

Hyde Park, Ont.

CHALCID PARASITES IN LARVÆ OF LAVERNA GLEDITSCHIELLA.

V. T. Chambers in "Canadian Entomologist," vol. ix, p. 233, says—" *Laverna gleditschiella* is much subject to the attacks of hymenopterous parasites in its larval condition. Yet it is difficult to understand how this is possible under the conditions of its larval life. I have never been able to understand how the larvæ gets to the pith without leaving some trace of its path from the outside of the stem. The egg must be deposited on the outside of the stem, because the ovipositor of the female is too soft to be able to penetrate the bark and wood to the pith. It would seem that the eggs of the little chalcid parasite must be deposited on the microscopic larva of the moth as soon as it emerges from the egg, and before it has eaten its way into the branch, because it is impossible to understand how it can be done afterwards, as these little parasites are themselves so small that two of them placed end to end would not extend from the outer surface of the back of the twig to the central pith, and their ovipositors are very short and not exerted."

In elucidation of this problem, I am of opinion that the egg of the parasite is not laid upon the lepidopterous larvæ, but on (or in close contiguity to) the egg of the future host, and the eggs hatching simultaneously, or possibly those of the parasite a little in advance, the larva of the hymenopterous parasite attach themselves to the body of their victim, into which they immediately make their way and are carried into the pith inside the body of the lepidopterous larva. In no other way can I conceive it possible for Chalcid parasites to infest the bodies of internal feeding larvæ of such small dimensions as those of the micro-lepidoptera.

RICHARD SHIELD.

Montreal, April, 1883.

"CAUSES OF RARITY IN SOME SPECIES OF INSECTS."

The interesting paper on this subject by Mr. Bowles, in the last number of the

Canadian Sportsman and Naturalist, offers to entomologists some valuable ideas for consideration, and draws attention to several points in connection with our insect fauna which should be carefully investigated. *Chioasobas jutta* was mentioned as becoming rare in the vicinity of Quebec through the draining of the swampy tract in which its food plants grew. Near this city there is but one habitat so far discovered for *Melitea phaeton*, and this of a very limited area. Should it be cleared and drained, as has been partly done already, this beautiful species would disappear from our local fauna. Thus in the case of species having restricted habitats, we can trace the cause of their disappearance, and similar causes will account for the gradual extinction of many species having a wider range. As the forests and marshes are cleared, many varieties of food plants are partly or wholly exterminated, while the insects have now added to the list of their enemies. Thus with a scarcity of appropriate food and with additional foes to encounter, they are sooner or later numbered with the things that are no more. The unusual abundance of parasites in any year, or series of years, might in the case of a rare species lead to its extinction, but this would, probably seldom occur over an extended area. Immense numbers of *Vanessa antiopa* were destroyed last season by small ichneumons, but in the case of this common butterfly the result can be but to check it for a year or so. The effect of different seasons upon insect life has, as Mr. Bowles remarks, not yet been thoroughly studied, and the difficulties of doing so are very great, owing to the enormous diversity of species, and that what is one's meat is another's poison. I think we may safely predict, however, that after the cold, steady winter which we have had, with its abundance of snow covering the ground continually, we will have an unusual number of insects during the approaching season, and our collectors would do well to record whether such proves to be the case. The conditions appear to me to have been very favorable, for a large proportion of our species at least. I have not noticed any migratory habits in our species of butterflies and am unable to say whether they have much part in causing an abundance or scarcity of local lepidoptera. *Vanessa J. album* is rare here I imagine, for only one specimen has been captured in six years. The theory of species having originated with a certain vital impetus, which in some has already, and

in others is now almost exhausted is particularly worthy of attention, whatever its value. We know that innumerable species have become extinct in past ages, and have been followed by those which now furnish our collectors with their favorite occupation. We further know that within the memory of man many species, as for instance among birds the great auk and the dodo, have vanished, while others are even now crossing the threshold. Variations in climatic conditions, with consequent alteration of habitats, must account for the vast majority of changes in the terrestrial fauna. What percentage, if any, can be ascribed to an inherent lack of specific vitality appears to be a problem offering but little prospect of solution. Not being a lepidopterist I can merely offer a suggestion, or rather I will put a few queries, as to the sterility of the autumn-emerging females of the Sphingidae, a characteristic of some of our own species as well as of the European ones mentioned. Can we consider these autumn specimens as immature individuals, which, under exceptional conditions, attain the perfect form without a corresponding perfection of the generative organs? Had they the necessary vitality and ability to exist during the winter, and until the spring individuals (sexually mature) emerge, would the *ova* become developed? Does the appearance of such specimens after a hot and prolonged summer indicate descent from species which in more southern localities, or under different conditions of temperature in their present range, were double-brooded? A writer in "Science Gossip" some time ago recorded the occurrence in North India of species which are also taken in England, and stated that species which are single-brooded in the latter place are double-brooded in India, and also appear in great and often astonishing abundance. Among them is *Sphinx convolvuli*, which apparently is only a visitant of the British Isles, where it appears to be incapable of continuing the species owing to unfavorable climatic conditions. The last point brought forward in Mr. Bowles' instructive paper is the tendency of imported insects to supplant in some instances our native species and to cause them to become rarer. This is often due to the energetic measures taken to suppress the new comers, and which tend equally to thin out the native species which, although they have similar habits, are not so prolific or destructive as to rouse agriculturists to take up arms against them. The precautions taken

against *Pieris rapae* are equally effective against *Pieris oleracea*, and have doubtless tendered to its decrease in the districts invaded by the foreigner.

W. HAGUE HARRINGTON.

Ottawa, 5th April, 1883.

CAUSES OF RARITY IN SOME SPECIES OF INSECTS.

I have been much interested in an article by G. J. Bowles in *The Canadian Sportsman and Naturalist* for March, 1883, bearing the above title and although I can offer little towards the elucidation of the subject, yet I may attempt a few suggestions and facts which may not be uninteresting. For a convenience and purpose, I class them under the following heads:—

1. Drainage and cultivation.
2. Variations of seasons:
3. Migrations.
4. Holding over.
5. Occasional visitants.

1. The drainage and cultivation of land by destroying or causing a scarcity in the natural food plant or plants of any particular insect must of necessity make the species rare in that district, ultimately leading to their extinction, but on the other hand, cultivation may have the effect not only of producing other species in that district, but of almost changing its *fauna*. This according to Mr. Bowles' statement, is now in progress in the Gomin swamp near Quebec, in the case of *C. jutta*, and the same effect is remarkable in the Lincolnshire and Cambridgeshire fens (England). In Yaxley fen and Whittlesea mere, where some years ago, *Papilio machaon* used to be taken in abundance and *Zeuzera arundinis* commonly, but through the drainage and cultivation of the fens, those insects are now becoming scarce, while *Chrysophanes virgaurea* and *C. dispar* have completely died out. On the other hand, cultivation and drainage have changed the fen *flora*, producing an insect *fauna* entirely dissimilar to their predecessors.

2. Climatic influences on the variations of seasons no doubt have a very great deal to do with the relative scarcity or abundance of insects, not so much, I am inclined to think, as to the warmth or coolness of the previous summer, as to the duration and regularity of the winter temperature. In seasons when the ground is covered with snow (as in the past winter) and as a consequence the temperature

has been almost equable, we may take it as a pretty sure guarantee that when spring commences and rouses the insect world, it will receive no check and those *pupæ* and *larvæ* which have lain all winter inactive, will, on awaking from their torpor, find vegetation ready to receive them. But on the contrary, an intermittent winter season; a succession of frosts and thaws is fatal in a great degree to Lepidopterous *larvæ* and *pupæ*; by alternate freezing and thawing, a species of fermentation is induced causing muscadine in the *larvæ* and rottenness in the *pupæ*, while exposing them at the same time to the attacks of mice, chipmunks and other enemies. These causes combined with their natural enemies such as ICHNEUMONIDÆ, CHALCIDÆ and TACHINIDÆ attacking the *larvæ*, must result in a corresponding scarcity.

3. Migrations of insects are as well known and established facts in entomology as those of birds in ornithology, but the reasons for them are not so clear. In birds it is usually for the purposes of breeding or the physical necessity of a climate more congenial to their habits, and the migration is total and not partial, except in the case of stragglers who from weakness or wounds, have been compelled to remain behind. Except in the case of the locust (*Locusta migratoria*) I do not know of any species of European insect periodically migratory. *Vanessa (Pyrramus) cardui* is probably the only Lepidopterous insect that has been met with far out at sea, and evidently with a settled purpose to reach some given point; but partial migrations from one part of the country to another are frequent and usually occur at the height of the season when the last brood has left the *chrysalis*, or, if the species is single brooded, almost as soon as it emerges. When I was at Fray Bentos del Uruguay, South America, in February, 1859, the branches of small trees for scores of yards were defoliated and the clustered *larvæ* of a species of *Vanessa* allied to *V. urticae* were bearing them down with their weight. They were as thick on the bare stems as bees in swarming time—in clusters of two or three feet in length—I believe that within the distance of a dozen yards, I could have collected eight or ten bushels of *larvæ*. But in two or three days, they had all left the trees, and in about a fortnight afterwards the insects could have been caught by thousands. They were flying in hundreds, rising in the air and settling like flocks of pigeons, but in a week after-

wards, fifty could not have been taken in the same locality, where before they appeared so abundant. Where had they gone to? Migrated evidently and dispersed themselves over the country. These *Vanessæ* were bred on the spot, but it is no uncommon thing to meet with small swarms or knots of butterflies evidently not feeding, but congregated for some other purpose, invariably occupying an isolated piece of bare earth or rock, and this usually on a warm, cloudy day.

W. H. Edwards, "Canadian Entomologist" vol. x, p. 140 says:—

"I have seen very few Papilionidæ of any species this season up to date, except *ajax*, which has been abundant as ever, but of *turnus*, usually exceedingly plenty in spring, I have seen scarcely half a dozen examples. No *troilus* and few *phlenor*. So *Colias philodice* and all *Pieridis* have been remarkable for their absence; but butterflies from hibernating *larvæ*, or hibernating imagoes, in contrast with those from hibernating *chrysalids* have been abundant—*Melitææ*, *Argynnis* *Vanessæ* and *Satyrids*. On 2nd June, 1877, I rode for several miles along a creek not far from where I live and *Papilio*s swarmed. Passing a flat rock by the side of the creek, a space on it, which I computed as not less than four feet square, was studded with *Papilio*s as thick as they could stand; when they rose it was like a cloud; nine-tenths of these were *turnus*. Allowing one square inch to each butterfly, and this is ample, there were upwards of 2 000 butterflies in that mass, and I passed lesser groups with every mile as I rode; so that the total absence of the species this year is remarkable. It would seem possible that the extreme mildness of last winter allowed of the existence or activity of enemies (insect probably) who sought out and destroyed the *chrysalids*, but why *ajax* should have escaped is beyond my conjecture."

This assembling of butterflies in particular spots in large numbers, rising simultaneously into the air when disturbed, and settling in the same place, is the normal action of butterflies just on the eve of migration, and the total absence of *Papilio turnus* the following year is the natural result of such migrations, no *ovæ* having been deposited previous to departure, thus those parts of the country to which these swarms had migrated would have a corresponding increase in numbers. In the summer of 1857, a great number of the Purple Emperor (*Apatura iris*) visited England. They swarmed in the streets and suburban gardens round London; they might be seen drinking in the puddles in the streets, and hovering over flowers in the gardens; they were evidently tired and starved, and so far from a twelve foot pole with a net at the end being required to dethrone his majesty from his lordly oak, he could be knocked down with a hat, and boys were vending them all crushed and broken for what they would fetch.

Where did they come from? *A. iris* is not a common insect at any time, even in its favorite haunts. Evidently they were strangers—emigrants—they had crossed the sea from their far off home in Germany, to be knocked to pieces in London streets—*sic transit gloria mundi*.

4. Holding over or retardation of development is one of those curious phases of insect economy which has never been satisfactorily accounted for. It is a well known fact among English Entomologists that the Death's-head moth (*Acherontia atropos*) is very apt to remain two or three years in the *pupa* state, therefore they subject them to heat in order to hasten their development. But even with this help, some of them will still remain in *pupa* for one or two years. At a meeting of the Entomological Club of the American Association for the Advancement of Science 1876, "Canadian Entomologist," v. viii p.p. 182-183.

"Dr. Morris asked if any of the gentlemen present who were in the habit of raising *larvae*, had made observations in reference to the length of time the development of the perfect insect may be retarded. He stated that three or four years since he had placed a number of cocoons of *S. cynthia* on a shelf in his house, and that after lying there all that time, some of them had this year produced the perfect insect. Dr. Hagen referred to an instance related by Kirby and Spence (7th Edit. p. 121.) where a beetle (*Buprestis splendida*) was ascertained to have existed in the wood of a pine table more than twenty years."

At p. p. 138-139 vol. ix., Canadian Entomologist, J. A. Moffatt writes:—

"On the 24th September, 1875, I took a great many large caterpillars of a reddish buff colour, with a dark dorsal stripe, feeding on the willow. They soon went down to the soil and spun themselves up in hard brown cocoons, when I put them away for the winter. In the spring of 1876, I brought them to the heat, and after waiting some time and nothing appearing, I opened one of them and found the caterpillar alive and as fresh in colour as when it first spun up. In this condition they continued until the fall, when I again put them away for the winter. In the spring of 1877, I again examined them and found them fresh and with signs of life, but as the season advanced, I opened some of them and found them dead, and the remainder having assumed a shrivelled look, I laid them aside as hopeless. On the 17th June, my attention was attracted by a scratching noise, which I found came from these cocoons, which were now reduced in number to six. On lifting, I found one of them rattling and shaking with great vigour; I returned it to the box and waited three days; when nothing appearing, I broke it open and a fully developed fly walked out in a very feeble condition, its length was 1 inch; expanse 1½ inch; head, thorax and legs black; antennae and feet yellow; abdomen brown. A yellowish spot between thorax and abdomen; wings light smoky."

From the foregoing, it may be deduced that although a certain number of *larvae* may be subject to the same conditions, yet that the result will not be the same individually; as

seemingly each has its own constitution and measure of vital impetus, and no external conditions (short of accident or actual destruction) will cause divergence therefrom; and in this we see a wise provision of nature, as, if all the brood of these large and conspicuous insects were to emerge at one time, their chances of extermination would be much increased. But by a portion holding over and only a sufficient number being developed to continue the species, without becoming unduly conspicuous, a reserve is maintained for any eventuality. It is remarkable that this peculiar property is only possessed in a marked degree by the Sphingidae and Bombycidae.

5. Occasional visitants are those which by force of winds are blown upon our shores. Instance that magnificent insect (*Charocampa neri*) which has been taken in England at long intervals, and its *larva* at still longer; but from the fact of its having been taken in both the *larva* and *imago* states, it must rank as a British insect. There is no doubt that it flies across the channel, as it is always taken on the south or south-east coast. As the French variety of the common goldfinch, (*Fringilla carduelis*) in the spring and fall, flies across the channel to the same coast to feed and returns on the same day, there can be no reason why so large and strong winged an insect as *C. neri* should not accomplish the same journey, especially when attracted by light; but it must always remain a rare insect; its natural food-plant (*Nerium oleander*) being well nigh unattainable, although it will feed on the vine. Having now brought this article to a close so far as my data and space will permit, I must leave it in the hands of others to furnish their quota of information on this abstruse subject; being a firm believer in the Caxtonian aphorism—That every man of sound brain, whom you meet, knows something worth knowing better than yourself.

RICHARD SHIELD.

Montreal, April, 1883.

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THE CANADIAN SPORTSMAN AND NATURALIST.

No. 5.

MONTREAL, MAY, 1883.

VOL. III.

WILLIAM COUPER, Editor.

TO CORRESPONDENTS.

We want a continuance of original communications relative to Canadian Natural History, and results from the use of the Rod and Gun, which are always welcome; but it is necessary that manuscripts should be in our possession before the beginning of each month.

COOPER'S HAWK.

(*Accipiter Cooperi*)

An adult female of the above was sent to us by Mr. Woodward, U.S. Vice-Consul at Coaticook, P.Q. On dissection, a full developed soft-egg was found in the ovarium. It appears that the bird was caught by a man who brought it to him in a small wire cage. From these facts we may safely record this hawk as nesting in April in the Province of Quebec.

BROAD-WINGED HAWK.

(*Buteo Pennsylvanicus*)

Mr. Woodward, of Coaticook, sent us a female of this species lately; it, also, indicated that it laid its eggs in April, and doubtless nests in the Province of Quebec. The egg of this Hawk is sold to collectors, from \$1.00 to \$1.25.

A YOUNG WEASEL.

On the 18th instant, a small Weasel was brought to me, which was caught while being carried in the mouth of the parent, as a cat is seen to carry its kitten. This fact is new to me, but it may, however, have been noticed by others. The body of this young one is only four inches in length; tail, two inches, and the fur is much finer than in the adult. The dress is in accordance with the adult in summer.—C.

HOW TO LOOK FOR COCOONS OF OUR LARGE MOTHS.

There are some beautiful large silk spinning moths found in Canada, the caterpillars of which feed on various forest and cultivated trees. By obtaining cocoons of these moths, the perfect insects will be procured if the chrysalides are living. About the end of April I collected ten fresh cocoons of probably three species within a space of four acres on Mount Royal. The most common cocoon is oblong, generally spun within a leaf, and they are found attached to twigs about a foot or two above the ground. They are covered with snow in winter, but by careful search they may be easily seen in April or the early part of May. I have found several cocoons of this species destroyed by mice this winter. It is called the Polyphemus moth (*Telea polyphemus*). The most productive localities to find these cocoons are in scattered underbrush partially shaded by large trees. Another oblong cocoon, that of the most beautiful of our large moths (*Actias luna*), is generally found in the spring on the ground under butternut trees. The caterpillar of this moth fails to make a firm attachment to the tree, therefore the cocoons drop to the ground with the fall of the leaf. Although butternut trees are abundant on the Island of Montreal, the *luna* moth is uncommon. The next cocoon is a large one, generally found on trees at various distances from the ground. It produces the largest of our nocturnal moths (*Platysamia cecropia*). There is also another almost similar cocoon rarely found in the vicinity of Montreal, which produces an allied form called (*Platysamia Columbia*). These species are all worth looking after, as they are magnificent insects and the blending of their colours would charm the eye of any artist or lover of nature. The last rare one occurring near Montreal is the Prometheus moth: (*Callosamia promethea*), whose caterpillar seems to be a good architect, as the cocoon is firmly attached by a strong silken band to the twigs of trees, from which they are pendant. When they are discovered it will be necessary to climb the tree to procure them.—C.

ENTOMOLOGICAL.

SIR.—In justice to yourself, I desire to make in your columns a brief statement regarding the beetle which I mentioned under the name of *Hylobius stupidus*, in a paper on some "Coleoptera injurious to pine," which was published in Transactions No. 2 of the Ottawa Field Naturalists' Club. On page 83 of *The Canadian Sportsman and Naturalist*, you stated that:—"We have no knowledge of this insect, and never met it under the name of *stupidus* in Canadian collections." My defence (page 101) was to the effect that the name was given in the lists of the Entomological Society of Ontario, and that there was a specimen so labelled in the collections of the late Mr. Billings. I have recently been able to have many of my beetles determined and in regard to the species in question am informed by Mr. J. B. Smith that it is only a variety of *H. pales*, being, "the form going in Canada under the name of *H. stupidus*." He adds that he has been able to make up a full series from one form to the other, and I shall endeavor this season to make up a similar series, if the intermediate forms are to be obtained here.

A couple of words have apparently been dropped from my paper on "Causes of rarity in some species of insects" in your last number. On page 225, in line 21 of second column "man" should be inserted before "now" and in the last line of the same column "been" should be inserted after "already."

W. H. HARRINGTON.

Ottawa, 25th April, 1883.

NOTE.—The insertion of *H. stupidus* in the Canadian list of Coleoptera, may have arisen from correspondence between the Entomological Society of Ontario and the late Mr. Billings, who probably supplied the name. *H. pales* varies in size; I remarked it in Toronto years ago, but as I noticed similar deviations among other genera of Coleoptera, it did not occur to me to prepare a series of the variable species. *H. pinicola*, Couper, is our most northern form of *Hylobius* and may not be found south of the latitude of Quebec. The word "man" appears in your copy, but "been" does not. We will be more careful in future. —C.

THE SAMSON FOX.

Montreal, April 16th, 1883.

SIR,—I would feel greatly obliged if you could give any information respecting the

"Samson" Fox. Why so called? What causes its peculiar difference from other Foxes? How long has the name been known?

Yours truly,

HORACE T. MARTIN.

NOTE.—Messrs. Martin & Co., furriers of this city, have lately purchased a number of skins of adult foxes, known in the townships as the "Samson Fox." This peculiar variety is minus the long glossy hair of the common fox, but it is abundantly covered with soft hair, having a peculiar singy appearance, which is generally seen in young foxes. It is said to occur in one locality, where it is called by the above name; but we are not prepared to say that it is a descendant of one of the three hundred foxes mentioned in the xv. chapter of Judges, which Samson caught and "took firebrands and turned tail to tail, and put a firebrand in the midst between the tails. And when he had set the brands on fire, he let them go into the standing corn of the Philistines, and burnt up both the shocks and the standing corn, &c." Perhaps some of our correspondents may throw some light on the "Samson Fox." We are aware that the common Red Fox has permanent varieties in North America; the silver-grey and dark-grey animals are merely fur changes of the common species. The result is said to occur through segregation, for instance, the Island of Anticosti, where the silver variety is more abundant than in any other locality in the North where the common fox is found. All our wild American quadrupeds are, however, subject to variation in fur; we have grey and black varieties in the Ground Hog or Woodchuck, and, in the neighbourhood of Quebec, muskrats are sometimes found perfectly white; but they are not albinos, the eyes are hazel like the ordinary rat. Occasional white specimens of the common Virginian deer are shot in Canada, and, during some seasons piebald varieties of the Black Squirrel have been caught in Ontario. Regarding the Black and Grey Squirrels, Can-

adians are frequently in ignorance, claiming that they constitute two distinct species, while they are actually the same animal; the fur merely forms the variety, as is seen in the Ground Hog, Muskrat and other native quadrupeds.—C.

THE CANADA LYNX.

SIR.—I notice in your number for June, 1882, that a subscriber corrects the assertion of Dr. Garnier, that the Canada Lynx, (*Lynx Canadensis*), “has never been seen south of the Ottawa River” in Ontario. Why Sir, the Canada Lynx, notwithstanding the cutting away of much of our native forests, is still quite common even within five and ten miles of the city of Ottawa. Not more than four years ago, two of these animals were killed within two miles of the western limits of the city. Wherever there are large forests in Ontario, the Canada Lynx may still be found, and will, doubtless continue to abound in its old haunts until the forests shall have disappeared.

Yours truly,

WM. P. LETT.

Ottawa, April 27th, 1883.

NEW BRUNSWICK NOTES.

LOON. (*Colymbus torquatus*.)

In my catalogue of the birds of New Brunswick it is stated, “Two races of Loon spend the summer in New Brunswick and breed here. They have plumage of similar colors and markings, but one is smaller than the other, being some six inches less in length. The larger bird is common on the lakes and rivers in all sections of the Province, seldom seeking the salt water until the rivers freeze over, while the smaller is rarely found away from the sea-shore, and, though only seen occasionally in the Bay of Fundy, is quite abundant on the Gulf of St. Lawrence.”

A correspondent has asked me to send a further account of these birds to the *Canadian Sportsman and Naturalist*, but I have as yet discovered nothing additional concerning them though observations made since the above was first written have confirmed the opinion then advanced.

It has long been well known that Loons vary very considerably in size. In Baird's report of 1859 the length is given as thirty to thirty-six inches, and Allen in “Mammals

and Winter Birds of Florida,” (1871) gives a long list of varying measurements, but, I believe it had not been previously noted that the smaller birds display a preference for the salt water while the larger race is usually found during the breeding season on the lakes and streams. I have not seen a nest of the salt water or Sea Loon but the fishermen on the Bay of Chaleur, who are familiar with the appearance of the two races, and readily distinguish them, told me that the Sea Loons build in the marshy spots along the coast.

These fishermen have good reason for remembering the smaller birds as they destroy numbers of fish after they have been caught in nets or weirs, though the Loons are themselves sometimes caught in the nets while thus poaching; I remember on one occasion seeing six brought on shore in one boat. A correspondent inquires if the smaller of these two races may not be the black-throated or Arctic Diver, but such is not the case. In immature plumage the two species bear considerable resemblance but the mature birds are easily distinguished by the difference in coloration and in size.

The Black-throated Arctic Diver was well named *Arcticus* for they have been seldom seen south of Hudson's Bay, though a few examples, in immature plumage only, have been taken along the Atlantic Coast adjacent to the mouth of the Bay of Fundy.

MONTAGUE CHAMBERLAIN.

St. John, N. B.

THE WILD OR PASSENGER PIGEON.

Ectopistes migratorius.

DEAR SIR.—Would you allow me, through the medium of your columns, to ask whether it is a fact that this bird which until 1850, in the spring, was seen in swarms all round Quebec, lighting occasionally on the glaci—was also abundant in the woods of Chateauguay, not far from Montreal. I was told by a credible person that as late as 1851, there was a pigeon roost, at a place called the *Four Corners*, in the mountains back of Chateauguay, where their numbers and flight quite realised the description Audubon has left us of the wild pigeon roosts of Kentucky. We scarcely see one in a year round Quebec at present.

J. M. LEMOINE.

Quebec, April, 1883.

THE ACADIAN SCIENTIST.

We have received No. 4 of this magazine, which is issued in a new and handsome dress. The matter is both interesting and instructive, and we have no doubt the improved appearance of the serial will conduce to its success.

THE LOGGER-HEAD SHRIKE.

Lanius ludovicianus, Linn.

On the rising ground, in the fields behind the village of Lachine, many large thorn trees have been growing for years past, and the Loggerhead Shrikes have, doubtless, for a long time made the place a resort for the prosecution of their peculiar habits, as also, to rear their young. They generally arrive in the above locality early in April, as the foundation of the nest is laid about the 18th, and the first egg is probably deposited on or about the 24th of the latter month. A nest of this species, containing three eggs, was found in a thorn tree at Lachine, on the 30th of April. The parents of this nest were shot in its vicinity, before the nest was discovered, but proof of this was the finding of a fully formed egg on dissecting the female. The nest is bulky and warmly constructed, with little pretension to architectural beauty, as it is mainly formed exteriorly of withered twigs of thorn, stalks of weeds intermixed with horse hair, cotton rags, cord, thread and wool. The interior, or nest proper, is extremely neat and comfortable, being evidently formed for warmth. It has a diameter of three inches, with a depth of two and a half inches, while the wall is a little over one inch thick, thus forming a much larger nest than that of the Redbreasted Thrush or Robin. The interior is lined with wool, horse hair, and a quantity of feathers from domestic fowl. There is but slight difference in the nuptial plumage of the sexes. I notice that the female has but one central feather in the tail, while the male has two; the tail feathers on each side of the latter are pointed, with white at the apex. The white band on the wing of the male is

wider than that of the female, and his wing coverts are generally whiter. The throat and under parts are dirty white in both sexes, showing no indication of the dark, wavy lines so conspicuous in their young. I am astonished that this bird should be taken for the Great Northern Shrike, which is larger and has a more prominently toothed beak. The Loggerhead is weaker in form, besides, the marking of the two species are so distinct, that the merest tyro who studies our birds should not mistake them. In connection with the above, I have selected Dr. Elliot Cones' charming and accurate description

"Of Shrikes in a State of Nature,"*

"We will here take up the Loggerhead and the Northern Butcher-bird together—for they are as one in all essential particulars—reserving for after consideration the few points that mark their respective histories. Looking at the bold, defiant aspect of the Shrike, however inadequately portrayed in the accompanying sketch, we cannot fail to recognize a bird of extraordinary spirit,—the stout, hooked beak, combining claw and tooth in one murderous instrument, is surely the weapon of a Hawk, or other, rapacious bird! In one sense we certainly have here a bird of prey; yet, if the portrait were finished at full length, we should find the feet as weak and harmless as those of a Thrush or Sparrow, instead of being furnished with the talons which confer such a raptorial prowess upon the Falcon, the Eagle, and the Owl. If, furthermore, we should examine the anatomy of the Shrikes, it would be merely to discover that the entire structure of the internal organs is modeled after a strictly Passerine type. Though the bone and muscle indicate unusual strength and vigor, the beak itself is the seal of the Shrike order—a mark as plain and unmistakable as that which stamps the tribes of Israel, wherever dispersed over the earth—the symbol of a spirit as bold and reckless as ever dwelt in the breast of any one of the Hawks called "noble" in the olden time, when falconry beguiled the leisure hours of kings and royal mistresses. Matching the bravest of the brave among birds of prey in deeds of daring, and no less relentless than reckless, the Shrike compels that sort of deference, not unmixed

* Birds of the Colorado Valley, part 1st, 1878.

with indignation, we are accustomed to accord to creatures of seeming insignificance, whose exploits demand much strength, great spirit, and insatiate love of carnage. We cannot be indifferent to the marauder who takes his own wherever he finds it—a feudal baron who holds his own with undisputed sway—an ogre whose victims are so many more than he can eat, that he actually keeps a private graveyard for the balance. Lest such a picture may seem exaggerated, let me make good my statements. The Shrikes food consists of such birds, quadrupeds, and reptiles as he can capture and overpower, together with insects, chiefly of the larger kinds, and especially grasshoppers. These he pursues, attacks, and destroys quite as a Hawk does; and he has the very curious habit of impaling their bodies upon thorns. Numberless illustrations of the spirit the Shrike displays might be given. Though smaller in stature than the least of our Hawks, he habitually destroys birds and other animals as large as those upon which some Hawks subsist, and quite as capable of resisting attack. Appropriating to himself sufficient territory, where no other bird may safely intrude, he becomes the terror of the neighborhood; and woe to the unlucky Finch or Warbler that ventures to trespass on these hunting-grounds! Like a veritable sentinel on guard, the Shrike stands in wait upon his chosen post, ready to pounce with unerring aim upon the first little bird that may dare to rustle in the nearest bush. His impetuosity and temerity are well displayed in the onslaught he sometimes makes upon cage-birds hanging at our windows; and he has even been known to enter an apartment, bolting through the open sash with perfect recklessness. Dr. Brewer narrates the case of a Shrike who dashed at a Canary without perceiving that the window was closed. He struck the glass with all the momentum of his impetuous flight, and fell to the ground, stunned by the force of the blow.* He revived, however, and was kept in confinement for some time, during which he continued sullen and fearless, and greedily devoured small birds which were offered him for food, though refusing to eat

raw meat of other kinds. Notwithstanding the protection that a cage affords, Canaries are not seldom killed by the Shrike unless speedily relieved from his attack. Sometimes they are so terror-stricken that they fall faintly to the bottom of the cage; but they oftener flutter and dash themselves against the wires, till seized by the bird of prey, who scalps them, breaks in their skull, or takes their heads off. The small birds that the Shrike destroys in a state of nature are either captured at a single dash, or caught in open chase, and killed with a blow of the beak. They are then devoured upon the spot, or carried to the "cemetery" and stuck upon a thorn, as I shall presently describe with more particularity. As if conscious of his prowess, the Shrike shows little fear in the presence of man. Under some circumstances, indeed, I have found a Shrike so wild that my endeavors to obtain a shot were unavailing, but the very opposite is oftentimes the case. You may enter the thicket the Shrike has chosen as his hunting-ground, and the bird will regard you with contempt, returning your regard with a gaze as steady and unflinching as it he were the better man of the two and knew it. At such a time, you will have a good opportunity to observe the easy nonchalant air with which he asserts himself. For all that the Shrike is such a gallant marauder, it must not be inferred that he is always on the warpath, intent on prodigies of valor. The doughtiest knights lay aside their armor at times, and the Shrike is fond of his ease in the intervals of his piratical enterprises. At such times, you may observe him lounging about with his hands in his pockets, so to speak, and nothing on his mind, when, as you approach, he will turn his head toward you with languid curiosity, just for a moment, and then dismiss you from further consideration. Sometimes you will see him ready for business, scanning the neighborhood closely from his watch-tower on the topmost twig of some bush or sapling, where he stands stiffly, bolt upright, like a soldier on dress parade, ready to move at a moment's warning. He makes a rather imposing picture just then in his uniform of French gray with black and white facings, which fits him "like a dream"; the next instant—whish! he is gone, and the piteous cry of the Sparrow in yonder bush tells the rest of the story. A good deal of the Shrike's business, however, is neither brilliant nor romantic. The green sward below his

*A similar instance of birds' inability to see glass is within my own experience. Having on one occasion netted a large lot of Sparrows and other small birds alive, I turned them loose in a vacant room. In their terror and eagerness to escape, almost every one of them dashed against the window in the course of a few moments, and successively fell stunned and shivering to the floor—some to recover, others, more seriously hurt, to die shortly.

perch harbors a great many field-mice of different kinds, according to the lay of the land, and he has nothing to do but drop quietly down upon these little innocents. At certain seasons of the year, moreover, the fields swarm with grasshoppers, of which the Shrike is very fond, as he is also of spiders, beetles, caterpillars, and, in fact, almost any insect. In July and August, I have frequently seen Shrikes skipping about in old weedy fields, apparently amusing themselves; but I generally found, on watching them closely, that they were hunting for the 'hoppers, some of which they devoured then and there, after beating off their long hind legs, while others were carried to some tree near by and duly impaled. The tradition that the Shrike destroys exactly *nine* victims a day, and which is preserved in the name "Nine-killer," still sometimes heard, is very ancient, and I do not know to what source it may be traced back. It is a staple myth, which has been current for centuries in folk-lore, and may be found related with gravity in some of the older treatises. I should very much like to learn its source and the circumstances under which it was first stamped with authority. The Shrike's most notable trait,—the habit of keeping a butcher-shop, where the bodies of the slain are exposed,—has also been remarked for many hundred years, and various ingenious theories have been proposed to explain what has been considered a wholly exceptional and anomalous habit. When fully considered, however, I think it will be found less singular than it at first appears to be. The Shrike is a veritable "butcher bird," in as far as that title may be given to a bird who kills what he does not eat, and his operations in this line have been made the subject of repeated observations, so that we are in possession of all the facts in the case. The birds, mice and insects are sometimes impaled alive, and left to perish miserably; sometimes their dead bodies are similarly stuck upon the sharp twigs. The shambles of the pitiless butcher may be found in some thorny tree or bush, which in the course of time presents a curious spectacle, with the numerous creatures sticking here and there. Quite a museum of anatomy is sometimes thus brought together in one place, but as the Shrike is not particular about making a collection of curiosities, we may recognize his work in single specimens scattered anywhere about fields and shrubbery. Some have surmised that the

bodies are stuck up in this conspicuous way as decoys, to allure other victims within reach. This "bait theory" in its fulness is set forth in the article noted below,* which may be taken as a typical illustration of this way of thinking. Mr. Heckewelder represents that whereas the Shrike lives entirely upon mice and small birds (which is not the case), and whereas the grasshoppers are all stuck up in natural attitudes as if they were alive (though they are not so fixed, in fact), therefore this is done to decoy birds that feed upon grasshoppers; for if this be not so, and if the insects be stored up for future use, how long would one or even two grasshoppers last a Shrike? But if the intention be to seduce little birds, then that number or half as many, or fewer still, would be good bait all winter. And so forth. Wilson, with his usual good sense, has disposed of this theory, "pretty fanciful," as he calls it, in a rather satirical as well as practical way. He notes that grasshoppers themselves are the favorite food of the Shrike, and that they would make the very poorest bait for our small winter birds, which are mostly granivorous; that there is no necessity for a strategem of such refinement and cruelty, as the Shrike is abundantly able to capture all the birds he wants in open chase; and, finally, that the Crows and Jays may be supposed with equal probability to be laying baits for mice and flying squirrels, when they hoard up their corn. The bait theory may be safely discarded. Another idea is, that the Shrike avails himself of a thorn to secure his prey whilst he is devouring it, just as a Hawk or Owl would use his claws for the same purpose; and that this has become such a habit that the Shrike may spit, and then leave untouched, the carcasses he does not wish to devour. Undoubtedly, the bird's feet and claws are weak in comparison with his stout beak, large head, and powerful muscles of the neck and breast; but no one can doubt the bird's ability to hold his prey securely while he tears it to pieces. Any one who has had a Shrike scratch him should be satisfied of this. There is another notion, that the Shrike impales his victims in the excess of his cruelty, from sheer love of inflicting pain. But this argues a moral obliquity which we can ascribe

*1799. HECKEWELDER, J. A letter from Mr. John Heckewelder, to Dr. Barton, giving some account of the remarkable instinct of a bird called the Nine-Killer [*Lanius borealis*]. (*Trans. Amer. Philos. Soc.* iv, 1799, pp. 124, 127.)

to no bird,—if indeed any moral quality whatever can be discovered in their actions. It is true that a cat tortures a mouse, and seems to delight in inflicting pain. I cannot but believe, however, that the cat is unconscious of the mouse's misery; that what she enjoys is not the suffering of her victim, but the exercise of her natural powers. Excessive destructiveness, as when cats or weasels kill more animals than they can devour, is very frequent; but it implies neither cruelty (in a moral sense) nor mere wantonness; it is a legitimate result of their rapacious nature, and for the rest, the animals may have a natural preference for some part of their prey, as the blood or brains, to secure enough of which they take more lives than they would if they fed upon the whole of the flesh. In the case of the Shrike, moreover, it is certainly the rule that the bodies are impaled after death, not while still struggling in the clutches of the captor. Analogy goes for something in natural history; and the analogy of the Shrikes' shambles to the storehouses of various birds is too obvious to have escaped attention. I think the right clue to the curious habit is thus found. Many birds lay up stores of provisions, like mice and squirrels. Among those of this country, birds of the Corvine tribe, as Crows and Jays, are conspicuous in this respect. The 'thievishness' of the Raven and Magpie in confinement is notorious; but it is simply the excessive development or perversion of their habit of hoarding food that makes them steal and hide away articles of no possible use to them, such as jewellery and silverware. The Californian Woodpecker offers another notable instance of stowing up food, as it does with infinite pains. I have seen branches of trees studded thickly with acorns, each stuck tightly by itself in a little hole bored by the bird for its reception. In other instances, the same bird has been known to insert acorns in the natural crevices of wood. These facts relate indeed only to the hoarding of fruits or inanimate objects; but we see a still closer resemblance to the habit of the Shrikes in the curious practice of the Red-headed Woodpecker, a versatile bird, one of whose singular traits has just been told by Mr. H. B. Bailey, of New York. This writer narrates* that a correspondent of his observed a Woodpecker's frequent visits to an old oak post, which on examination was found to present a large

crack, in which the bird had inserted about a hundred live grasshoppers, and wedged them in so firmly that they could not escape. Some farmers showed him other posts which had been put to the same purpose. This was certainly a laying-up of stores for future use, for the writer states that the Woodpecker later began to eat his hoard, and that at length only a few shrivelled dead 'hoppers were left. Wilson has observed, furthermore, that Jays and Shrike's retain similar habits in confinement; the Jay filling every seam and chink in his cage with grain and bread-crumbs, and the Shrike 'nailing' meat, insects and the bodies of such birds as may be thrown to him. I have had my doubts in this matter; and still, after observing Shrikes carefully in various parts of the country, must admit that the matter is not finally narrowed down to a simple question of hoarding. Too many bodies are stuck up, too promiscuously, and too few are made use of afterward, for us to consider it simply as a piece of the bird's thrift. I suppose the habit of impaling, considered simply as such, and without reference to ulterior purposes subserved, may have been gradually acquired as the result of the Shrike's physical organization—the relatively little force of grasping with his feet he possesses, in comparison with the power of his beak. The talons of a Hawk, for example, are very effective instruments, not only for striking and killing prey, but also for holding it while it is torn by the beak. The Shrike has much less prehensile power; it strikes with the beak, and devours as best it may. A Nuthatch, for example, will take an acorn to a crack in the bark, and wedge it there while it hammers away at it with the bill. Such a habit of fastening its prey having been acquired, as something entirely unconnected with the storing up of provisions, may then have been turned to account as a means of securing its prey for future use, and thus become the usual way of making a hoard. It is certain, however, that the Shrike makes no great use of his larder; and that he sometimes impales and sometimes not, apparently at his caprice. He is just as likely to eat a grasshopper as to stick one. He spits his victims as often when food is plenty as when it is scarce; and the majority of the bodies gibbeted are left to wither and be blown away, or be eaten up by the bugs. On one occasion, when I watched a Shrike closely for some time, I saw him impale a number of grasshoppers in

* Bull. Nutt. Ornith. Club, iii. no. 2, April, 1878, p. 97.

succession, and continue foraging for more, which he ate upon the spot as soon as caught. I never witnessed the act of impaling a bird or mouse, but I suppose it would be the same as for a grasshopper; and in the instance to which I refer the bird worked the unfortunate insect on the thorn with his beak, pushing and pressing it down with various strokes, until it was fixed to his satisfaction. But we have not yet finished our study of Shrikes—having still to consider their flight, their voice, and especially their domestic habits. There are two very different birds of this country which the Shrike resembles in the relative proportions of the wings and tail, as well as in the general conformation of the body. These are the Mockingbird, *Mimus polyglottus*, and the Sharp-shinned Hawk, *Accipiter fuscus*. Now if we picture to ourselves a bird whose attitudes, movements, and especially whose mode of flight, may partake on occasion of those of either of the birds just named, we shall have no wrong idea of the varied actions of which the Shrike is capable. The close general resemblance of the Shrike to a Mockingbird is really remarkable. The two are about of the same size, shape and color—in fact, it is not the easiest thing to tell them apart at a little distance, especially when they are flying. The similarity has long since been duly noted and commented upon; in fact, Swainson went so far as to make it the basis of a strong argument in favor of his fanciful quinary theory of affinity. The mode of flight, then, of the Shrike, under ordinary circumstances, is necessarily much the same as that of a Mockingbird, being light, wayward and even undulatory, when the bird is simply moving about at his ease, or foraging for the humbler kinds of prey that contribute to his support. Yet even under these conditions there is a certain dash about it, giving hint of the spirit he can infuse into his actions when he calls his powers to their full display. Then, in the manner of the Hawk, his flight is strengthened, firmly sustained for long distances, and on occasion quickened at a prodigious rate; the climax of this exploiting being reached when he plunges headlong after his prey, hurtling like a very Hawk. He is said at times to hover in the air, just over his intended victim, as if taking aim before he stoops to his quarry; but this can hardly be a characteristic habit, or it would not have escaped my attention. I do not remember to have ever witnessed it,

though it need not be doubted that the action is sometimes performed. When not on the wing, we may observe in the Shrike's habitual attitudes the same blending of Mockingbird and Hawk; or rather, the transition from one to the other, when his air of indifference and rather 'slouchy' appearance give way to the martial bearing which indicates that his attention is riveted upon intended conquest. So versatile and animated a spirit as that which the Shrike possesses necessarily seeks expression. There is no reticence about this bird, whose harsh outcries we may in turn interpret to mean anger and exultation—the challenge and the conquest—while the course of his passionate life runs on in almost incessant warfare. These notes mean much the same as the stridulation of the Kingbird, in whose temper there is much of kinship with the Shrike, both being impatient and aggressive birds. But notwithstanding the magnitude of his exploits, the Shrike is not a very lofty character after all; he picks many a needless quarrel with his fretful fellows, and all the petulance of a wilful, badly-governed disposition may be traced in some of the harshest of the cries that greet our ear. It is easy to say, and quite safe to make the assertion, that nothing more unmusical than the Shrike's notes is often heard; and it is usual to compare the voice of this bird to the creaking of a sign-board, or the grating of any other rusty hinge. But I suspect, though I am not a competent witness in this case, that those are right who ascribe to the Shrike some powers of song, limited though they be. Technically speaking, the Shrike is as truly Oscine as the Mockingbird itself; and no *a priori* reason appears why his notes should not at times be modulated with a tuneful quality. Several authors have in fact asserted such to be the case, protesting fairly against any sweeping denunciation in this particular. Thus, in speaking of the Great Northern Shrike, Audubon says:—'This valiant little warrior possesses the faculty of imitating the notes of other birds, especially such as are indicative of pain. Thus it will often mimic the cries of Sparrows and other small birds, so as to make you believe you hear them screaming in the claws of a Hawk; and I strongly suspect this is done for the purpose of inducing others to come out from their coverts to the rescue of their suffering brethren.'

(TO BE CONTINUED.)



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WILLIAM COUPER, Editor.

A NEW WORK ON THE BIRDS OF CANADA.

We have received a copy of "Les Oiseaux du Canada," by Mr. C. E. Dionne, curator of the Zoological Museum of Laval University, Quebec. It is a neatly printed volume containing nearly three hundred pages and several wood cuts. The author has adopted the classification and nomenclature of Doctor Cones, and gives a short description of each species with notes upon their distribution, etc. From the title of the work it is evidently intended not to be local; we would like to have seen a more complete account of the birds of the Dominion, many species occurring in Manitoba and other western portions not being included. In note to Brown Thrasher, Mr. Dionne states: "This species is probably not found in Quebec though common in Ontario." This is a mistake, as during the past few years these Thrushes have been abundant in the neighbourhood of Montreal and breed here regularly. The Yellow-throated Vireo is also rather common here in the spring, and the Loggerhead Shrike very common, breeding in suitable localities throughout the island. The Meadow Lark is also found in many places in the Eastern Townships. Numerous other errors of distribution also appear but we are not surprised at this, and must expect some years to elapse before local ornithologists will study up the birds occurring in their respective localities and furnish material from which can be compiled a standard work upon the subject.

With regard to the Cow bird, Mr. Dionne states: "Quelques naturalistes ont affirmé que l'Étourneau ne construisait point de nid, qu'il déposait furtivement ses œufs dans des nids de Pinsons, de Fauvettes, etc. C'est une erreur, comme le remarque M. l'abbé Provancher, qui a eu occasion de voir lui-même

plusieurs de ces nids et presque toujours dans les conifères. Il pond 5 ou 6 œufs bleu tendre, tachetés de roussâtre."

That this bird should have abandoned the habit of depositing its eggs in the nests of other birds and taken to nest-building, we are not prepared to credit. If Mr. Dionne can corroborate his statement, it will prove an interesting fact for ornithologists, if not, it is a serious mistake for a writer to make with regard to one of our best known birds.

THE FOX-COLOURED SPARROW.

During my summer visits to the Island of Anticosti and the north shore of the St. Lawrence, I have had many opportunities of watching this beautiful sparrow. In fact it was on the Labradorian coast that I first heard its delightful song, and although the notes are few, they are given in a sweet, clear, distinct tone; but when several males are responding, they seem to cheer and add life to their dreary surroundings; the call is certainly pleasant to the ear of man, more especially when he is alone in a region where the song of no other bird is heard. All this class of birds have their peculiar nuptial notes—that of the White-throated Sparrow is said to represent the words:—*Farmer-pay-the-rent-pay-the-rent*, while those of the Fox-coloured Sparrow sounds to my ear like, *O-dear-dear-pretty-pretty creature*. I do not think it has been found nesting in the Province of Quebec, west of Godbout. As far as I could discover, its summer retreat is in the bays of Anticosti and the woodlands skirting the north coast of the Lower St. Lawrence. It seldom nest on the ground, as those which I found were in small trees on the margin of rivers or creeks not far from the sea. Before the nesting season when pairing, the males will frequently fight as vigorously as the English house

Sparrow is seen to do in the streets of Montreal. While collecting insects at Ellis Bay Anticosti, two male Fox-coloured Sparrows were having a battle within a yard of where I stood, and they were so earnest in the affair that I caught them in my insect-net; they apparently had no fear of my presence. I gave the little pugilists their liberty, and in a few minutes afterward, both were singing as cheerfully as if nothing had happened.—C.

THE GOSHAWK.

(*Astur atricapillus*.)

A very fine adult female of this falcon was sent from Coaticook to Montreal, early this month, (July). We do not frequently see it in summer. It is generally more abundant between the months of October and January.

THE ENGLISH HOUSE SPARROW.

Dr. Elliot Coues, an eminent American ornithologist says that no step now likely to be taken can end in the extermination of these birds; they have multiplied so rapidly since their introduction on this side of the Atlantic, that it is useless to try the experiment. Some time ago the Corporation of Montreal were anxious to have the sparrows destroyed, suggesting poison as a means to kill them. They could never succeed by this mode, as the birds are now extensively distributed over temperate America, therefore a continual supply would come from adjacent cities and towns, and it would take years to get rid of them. The English Sparrow is preyed upon, since his introduction here, by cats, hawks, owls and shrikes; he survives, enjoying the climate and our habitations, and not particular as to the kinds of food he eats.—C.

MONTREAL BRANCH, ENTOMOLOGICAL SOCIETY OF ONTARIO.

The tenth annual meeting of this Society was held on the 8th May last, at the residence of H. H. Lyman, Esq., President. The

Annual Report showed that though the students of this branch of Natural History in Montreal are few in number, the interest of the meetings is well kept up. Six original papers were read during the year, and many observations on the insect life of Montreal stand on record in the minutes of the Society. The following gentlemen were elected officers for the ensuing year: G. J. Bowles, President; W. Couper, Vice-President; F. B. Caulfield, Secretary-Treasurer. Members of Council, H. H. Lyman, J. G. Jack, W. Shaw and H. Graves.

MR. WHITCHER ON FISH CULTURE IN CANADA.

We have before us, a long letter from Mr. W. F. Whitcher in "Forest and Stream," which is both astounding and instructive at this instant when fishculturists from all parts of the world are assembled at the Fisheries Exhibition in London, England. Of course Mr. Whitcher substantiates the fact that eggs can be artificially fecundated; that their *ova* have been successfully transported from America to Europe, and are there being developed into living fish. But "what remains yet to be done is to convince the world that a proportion of such prolific hatchings and abundant distribution, commensurate to the prodigious numbers hatched and liberated alive, has reached maturity and reappeared in commercial and industrial channels as a commodity of trade and an article of supply to such an appreciable extent as the faithful are justified in expecting. The multiplication of the marketable food fishes, as evidenced by the actual catch, is what remains to be proved. There can, I presume, be no doubt, that the public tax-payer has a right to demand this proof; and Canada, Parliament and the press are already asking for it in somewhat impatient terms." It is not our wish to disparage Mr. Wilmot's enthusiastic efforts as a fish-breeder, but honestly speaking, Mr. Whitcher is correct in alluding to "prac-

tical results," when he says "the truest interest of the enlarged propagation of fish, and the immense increase of food which we anticipate from artificial methods and their auxiliaries, that we should now begin to consider seriously the economic as the chief of 'practical results.'"

Fish hatching commenced in Canada about fifteen years ago; now there are eleven government fish hatcheries, eight of which are occupied in developing salmon *ova* only; two are employed in hatching salmon, white fish and trout eggs, and one hatches whitefish and pike-perch, and the entire cost of these public establishments to date is \$259,400. We will look further into this matter in a future issue, but in the meantime it is evident that Mr. Whitcher has given a clear statistical statement showing that we have been wasting money without reaping the fruits.

PROTECTION FROM INSECT ATTACK.

Mr. J. A. Lintner, the New York State Entomologist has sent us a pamphlet wherein he propounds a new principle in protection from insect attack. He says "it will be readily conceded that the use of preventives, whenever practicable, is more economical, more effective, and often more convenient than a resort to remedies." His object is to prevent insects from depositing their eggs on their food plants, and he says it can be and has been done with perfect success in many instances. By applying to the plant or to the soil certain odorous substances which are disagreeable to the insect, and therefore to drive it away; contending that the larger proportion of the insect world are guided in their natural habits by the sense of *smell*. The popular idea that many insects attacking vegetation select their food plants whereon to deposit their eggs by the sense of sight is evidently erroneous, and not in accordance with his investigations. He has watched "the incomprehensible acuteness shown by an insect in the discovery

of the particular species of plant upon which alone the young caterpillars could feed, in the discovery of a single individual of a rare species occurring in a certain locality, and growing in such a manner as effectually to hide it from human observation. When its range of food plants extends beyond a species to all the members of a genus, how could it detect all of the greatly differing forms? When a still broader range embraces the several genera of an extended order, a still greater variety of form are presented, which the rude insect brain must group and classify, and claim within its province. How amazing such knowledge without previous instruction. It had no parents living as in the class of Vertebrates, which might teach it by example. It had no ancestors a whit wiser than itself from which to learn. The deposit of the egg in its place may have been but the second voluntary act in its imago life, regarding that of flight for the purpose as the first. Perhaps a plant from some distant shore, of which not one of its ancestry could have any knowledge, is brought within its range of wing; its flight is unhesitatingly directed to it, and its precious burden of eggs, without a shadow of mistrust, is at once committed to its leaves. Such knowledge has never been attained by our most distinguished botanists, and it is beyond the scope of human intellect. We have called its displays instinct, a word conveniently framed to cover manifestations in other classes of animated beings which we are utterly unable to explain. As a partial explanation of these wonders, it has been suggested that to the insect world may have been given senses differing in number and in kind from those that we possess. But all the wonderful phenomena attendant upon insect oviposition by selection, is readily explained under the supposition that it is guided and controlled by the sense of smell, and notwithstanding the laborious investigations in insect structure, conducted through a century by some of our most distinguished scientists, we are utterly

unable to point out with positive certainty the precise location and nature of the organs of smell." Among the odorous substances which Mr. Lintner mentions are, kerosene oil, coal tar, naphthaline, carbolic acid, gas-lime and bisulphide of carbon. These he says have been successfully used to change the natural odor of the plant with which the insect is familiar, and while the latter is neutralized, eggs will not be deposited on the plant, it will be preserved from such attack as effectually as if it were inclosed in glass." Mr. Lintner deserves our thanks for this contribution to economic entomology, and we trust that he will continue the experiments. It would be serviceable to Horticulture if some trials were first made on the insects infesting the fruit trees. By odorising the apple, pear, plum and kindred species during the season when their insect enemies are on the wing, some interesting and probably important discoveries may be made. We know that several of our injurious insects are not particular what kind of food they eat, and the checkmating of an insect enemy on one fruit producing tree may compel it to attack another of equal value, if its odor leads the insect to it. Instance *Telega polyphemus* which has been recorded by Mr. W. Brodie, of Toronto, to feed on forty-nine distinct plants. Can it be possible that plants belonging to the Orders: Tiliaceae, Rosaceae, Grossulaceae, Hamamelidaceae, Cupuliferae, Juglandaceae, Betulaceae, and Salicaceae, have similar odors to attract this moth? That insects possess organs of smell have been repeatedly illustrated, the difficulty is to discover their location. It is indeed curious to notice the mode in which some insects select food-plants for their progeny. They appear to go directly to the plant, but whether they discover it from odor or the sense of sight remains a mystery. Our experience is that when we visit a swamp in summer, female mosquitoes pounce on us greedily, but if a mixture of coal-tar and olive oil is rubbed on our hands and face, we remain there without being

annoyed by insect parasites. They will certainly come and touch us, showing clearly that they do so by means of sight, but they leave when the odor of coal-tar affects them. Mosquitoes are diurnal and nocturnal in their flight, and can be very vigorous during both times, alighting on your face at night, is evidence that their eyes at all events, are suited for daylight and darkness. Why is it that black flies which are so severe in open air in daylight, will not touch a person within a house? I have seen the panes of glass in houses on the Island of Anticosti, covered with these insects, but they did not annoy the people while inside the house. The eyes of the black fly are apparently intended for light alone, as they retire on the approach of night.—C.

THE COW BIRD.

Molothrus ater, Bodd.

More than usual interest is attached to the history of this bird from the peculiar habit possessed by it of depositing its eggs in the nests of other birds, leaving to them the duty of incubation and brood rearing. Although few ornithologists have witnessed a cow bird in the act of depositing its eggs, it is well known that this is accomplished in the ordinary manner, during the owners absence from the nest. The foster-parents selected are usually birds of a small size, and it is interesting to observe the actions of the various species to whose care has been confided the apparently not agreeable task of bringing up the offspring of this vagabond bird. Some species appear to view the introduction of the strange egg with more complacency than others. Dr. Brewer mentions a case in which a Red-eyed Vireo hatched three of these eggs, without laying any of her own, and as many as five have been discovered in nests of the Black and White Creeper and Towhee Bunting. It is seldom, however, that more than one egg is deposited in a nest, especially those of such small birds as the Warblers or Chipping Sparrow, this is usually laid soon after the completion of the nest, sometimes before the owners are ready to lay, in which case the nest is often abandoned. The Summer War-

bler although usually accepting the introduction of the strange egg, when some of her own have been laid, has frequently adopted the ingenious device of adding another storey to its nest, thus effectually getting rid of the obnoxious egg. I have also on one occasion found the nest of a Redstart so constructed, the lower storey containing a single egg of the Cow bird, and the upper four of its own. No further proof need be required of the antipathy of these birds to incubate eggs other than their own, and we cannot but admire the extraordinary intelligence displayed in thus burying the intruder, though the reason for their being compelled to accept a task so obnoxious remains as much a mystery as ever. It has been alleged with regard to the Cuckoo of Europe, whose habits are similar, that the eggs mature at long intervals, rendering it inconvenient for the bird to construct a nest and attend to incubation in the ordinary manner, thus justifying to a certain extent its conduct in depositing its eggs in the nests of other birds. However pretty, or true, this may be with regard to the Cuckoo, I do not think the Cow bird is less prolific, or regular in this respect than other birds. That they lay several eggs, and at ordinary intervals, can hardly be doubted from the comparative scarcity of the birds in some places and the number of nests found containing their eggs. Whether more than one egg is deposited in a nest by the same bird, it is impossible to state, the fact of finding a greater number does not prove them to have been laid by the same female, though from the similarity of the markings of different eggs found in the same nest, it has been thought that more than one has sometimes been laid by the same bird. The Red-eyed Vireo appears to show less concern about the reception of the egg than many others, and two eggs are frequently found in nests of this species. It has not been definitely stated by ornithologists whether the Cow bird removes the eggs of other birds in order to make room for her own. The Cuckoo is enabled to do this in the same manner in which she sometimes deposits them, by carrying in her bill, or feet. From the different construction of the bill of the Cow bird it would be impossible for it to convey an egg in this manner, yet I am convinced they sometimes either remove or destroy them, as it is very rare to discover a nest containing more than the normal number of eggs, including the Cow bird's. As tending to confirm

this opinion I will mention the case of a nest of the Red-eyed Vireo containing when discovered, two eggs, one of which was a Cow bird's; on visiting this nest three or four days later I found that the egg of the Vireo had been removed and two more Cow bird's eggs had been laid, the Vireos in the meantime had commenced incubation and were apparently as solicitous for the safety of the nest as if the eggs had been their own. However disagreeable the first discovery of the alien egg may be to some birds, it is evident this feeling is soon forgotten, and the young Cow bird never fails to receive the closest attention, no matter to what species his foster-parents may belong. When deposited in the nest of a Warbler or other small bird, it frequently happens that the egg of the Cowbird maturing early, the smaller eggs are broken by the young occupant, or, owing to his superior size and rapid development, the more delicate young are crowded out or destroyed. This does not appear to occur from an inherent desire to destroy the more feeble birds and remain sole occupant of the nest, as is the case with the the European Cuckoo, but is no doubt due to superior bulk and strength alone, as, when brought up in nests of birds of more equal size the young Cowbird remains a peaceful occupant, enjoying equal privileges with the rest of the brood until all are ready to leave the nest. Having no duties to perform requiring the close association and co-operation of the sexes, it is not surprising that this species should be polygamous, and they are also more or less gregarious being usually seen in small flocks throughout the season.

W. W. DUNLOP,

Montreal, June 25th, 1883.

NOTES ON THE RED-SHOULDERED HAWK.*

The nesting of Hawks in the vicinity of Hyde Park has been much disturbed this season. More than seventy eggs were taken and I have preserved a large number of specimens of Red-tailed, Red-shouldered and Cooper's Hawks. The Red-shouldered Hawk (*Buteo lineatus*), is the most common species breeding here, arriving in March. They are evidently mated when they first appear and may be heard almost any day in the vicinity of their old nests. When close to a nest, I have on several occasions known the male to swoop down within a few feet of my head.

The approach of the bird is silent, the first notice being the whirr of its wings as it turns upward after its downward headlong flight. Then both birds will rise, screaming above the tree tops and circle around for some time. Frequently the sitting bird will silently leave the nest before it can be shot at, and in a few minutes return with its mate when both will make a great noise. Sometimes a hawk will sit very close not leaving the nest until one strikes the tree for some time with a large stick or club. I have no knowledge that hawks of any kind build entire nests of their own. All those noticed by me were old crow's nests repaired. Sparrow Hawks lay in the holes of Golden-winged Woodpeckers and other hollows in trees. A Red-shouldered Hawk will add a lot of sticks to a crow's nest filling the centre with moss, grass, leaves, bark strips and sometimes old rags and paper. In one nest I found a turf or sod with long grass on it which altogether would weigh several pounds. Sometimes, I find dead mice in the nest, and on one occasion, a live frog which the hawk had brought for its mate. The nest is bulky being usually about a foot deep and eighteen inches in diameter. Inside there is only a slight hollow just deep enough to prevent the eggs from rolling out. Three is the usual number of eggs laid; sometimes two, and a set of four is a rare find. They build wherever crows nest at all elevations. The highest nest I have taken was eighty-seven feet; the lowest twenty-two feet, the latter was in a small birch tree and I took five crow's eggs from it the year before. Climbing for nests is sometimes very dangerous, the trees being often from three to four feet in diameter, but I have succeeded in reaching every hawk's nest I have yet found. The eggs of this hawk vary very much, both in size and colour. They are generally white or creamy, dotted, blotched, or splashed with umber and reddish brown. Occasionally one of the eggs in a set is pure white. I generally find them fresh from the 11th to the 25th of April, and when robbed, they will repair another nest not far from the first one and lay again in about three weeks, but the eggs of this nest are rarely more than two, and I have not known them to lay a third time during the season. Like most other hawks, when not disturbed, they will breed year after year in the same nest. The food of this hawk consist of frogs, snakes and small quadrupeds. I have not known them to attack poultry or

birds of any kind. They are amongst the last migrants in autumn, though once in a while, one may be seen in mid-winter. These are some of my own observations. I could copy considerable about hawks out of works on ornithology to which I have access, but prefer to give my personal experience.

JOHN A. MORDEN.

Hyde Park, Ont.

THE "SAMSON FOX."

Four or five years ago, my dogs killed a fox near St. Luc, St. Johns' Co., Que, whose fur was short, dull colored, a dirty reddish white, and having the singy appearance you mention. (May number.) The farmer with whom I was hunting, called this a "Samson Fox," but did not know why it was so called; he supposed it to be an ordinary Red Fox "out of condition;" it had every appearance of being such.

W. H. R.

THE PASSENGER PIGEON.

SIR,—In reply to Mr. LeMoine's query in your May number regarding the nesting of the Passenger Pigeon at Chateauguay Four Corners, State of New York, up to 1851, I beg to say that in the summer of 1867 or 1868 I was spending a few days at a place called Altona, on the Ogdensburg and Plattsburg Railway. Pigeons were flying over this place in immense numbers. Before sunrise hundreds of flocks of female birds would commence flying north to feed and continued to do so for an hour or two: by that time they would begin to fly south again; the female birds were then succeeded by the males. Towards eight or nine o'clock, a.m., the flight had entirely ceased. As it was evident these pigeons were nesting somewhere south of Altona, I decided to find the locality if possible. Having secured the services of a farmer residing in the vicinity, to act as guide, I set out early one morning, and, by following the direction in which the returning birds were flying—after a toilsome march through the woods of some five or six miles—finally came upon the nesting ground and truly my exertions were well repaid. Long before reaching the first of the nests, the noise made by the birds cooing, chattering and fluttering about, could be distinctly heard. The nests were built in a heavy hardwood bush, each tree having from

five to fifteen or more nests in it. The ground was covered with droppings, unhatched birds and broken eggs, the smell from which was most offensive. I penetrated about half a mile or more further into the woods and found no diminution in the number of nests, but rather the reverse. I was informed afterwards, but with what truth I cannot say, that this nesting ground covered ten square miles; the place is distant about one hundred miles from Chateauguay but is in the same range of woods. Wild pigeons were plentiful that year, after the hatching season, in the woods about Terrebonne and elsewhere in this vicinity.

W. H. RINTOUL.

Montreal, June 1883.

THE ORNITHOLOGY OF WESTERN ONTARIO.

SIR,—In the January number, Mr. McIlwraith takes exception to two statements in our list of birds of Western Ontario. On looking into these subjects we find that he is right in both instances; we can find no record in our note-books of the Ruby-crowned Wren wintering with us, even in the mildest winter, therefore that statement must be regarded as a slip due to the close association of this species with *calendula*. Our error concerning the great Northern Shrike arose from the supposition, which we find is incorrect, that the young of *excubitorides* resembled the adult, and when we found nests in which the young had the breast of the adult *borealis* we jumped to the conclusion that they were *borealis*. We have few winter specimens of this bird, all being either spring or fall birds, notwithstanding the fact that English sparrows are very common here in winter. It will be remembered that in speaking of the yellow-bellied Flycatcher, Mr. McIlwraith said that we would undoubtedly find it before long. Judging by this spring's experience it is probable that this has been a common bird all along, as of five small Flycatchers collected in London, three are Yellow-bellied and two Least. In his summary of the work done on the ornithology of this region he made two slight errors which he corrected in the next number, leaving the total number of species two hundred and fifty-eight to which we have now to add two species. In Toronto, Mr. Sandy's saw two specimens of the Rufi, *Machetes pugnax*, which had been killed in the bay at that place; and in the fall of 1881, Dr. Garnier shot a

Sandwich Tern, *Sterna cantiaeca*, on a mill-pond near Lucknow, which is now in Mr. Morden's collection. This brings the total number of species back to the original point of two hundred and sixty, and here we must be content to let it rest for the present with the hope that the ornithologists of our section will not long allow it to be stationary.

JOHN A. MORDEN,
W. E. SAUNDERS.

London, O., June, 1883.

"OF SHRIKES IN A STATE OF NATURE."

(Continued from page 236.)

On several occasions I have seen it in the act of screaming in this manner, when it would suddenly dart from its perch into a thicket, from which there would immediately issue the real cries of a bird on which it had seized.' Dr. Bachman further states that the Loggerhead has other notes than the grating sounds Audubon attributes to it:—'During the breeding season, and indeed nearly all summer, the male ascends some cedar or other tree, and makes an effort at a song, which I cannot compare to anything nearer than the first attempts of a young Brown Thrush. He seems to labour hard, making as it were almost painful exertions. At times the notes are not unpleasing, but very irregular.' Many later observers concur in attributing moderate musical ability to the Shrike, and I consider the fact established though I have never myself heard a bird of this kind sing. But I am very sceptical respecting his asserted powers of mimicry; for the few allegations of mockery we possess seem to be traceable to one or two sources, and to demand further confirmation. But we complete the portraiture of no bird's life and character until we place the nest in the foreground of the picture, with all its natural surroundings. Our two kinds of Shrikes, indeed, breed wide apart, and in some of the little details of their domestic economy they may differ, but the general course of events is the same in either case—'*calum non animum mutant*,' whether they be Loggerheads in South Carolina or greater Butcher-birds in the northern wilderness. Knowing our bird as we do now, we might suppose that he would make love or war with equal assurance of success, and there is no doubt of the fact that a Shrike is an impetu-

ous and an audacious wooer. The main point is, however, that in operations of this kind he has to deal with no shrinking, terrified Lark or Sparrow, glad to make any terms with the tyrant, but with a bird who proves to be his match in every particular. Set a Shrike to tame a shrew—pit a pirate against a virago—and the whole neighborhood may be congratulated when the stormy scene is over. About the time the courtship grows a little monotonous, you may look through the convenient thicket, where the saplings, bushes, and weeds are grown up close together, or along yonder hedgerow, with its lattice-work of creepers and greenbrier, to find the nesting-place of the redoubtable couple. It will not be hard to find, for the birds build low, and make a structure as bulky in proportion to their size as a Hawk's nest. It is commonly built in a bush or sapling, within arms' reach from the ground, the nest proper resting upon an extensive basement of stout twigs, rather loosely laid together and bristling in all directions. Upon such a support, the inner nest is built, of an endless variety of soft, fibrous, vegetable substances, such as grass-stems, weed-tops, bark-strips, catkins, leaves, mosses, lichens, &c., all matted together in such quantity that the cavity within is greatly reduced by the thickness of the walls. Some nests, also contain feathers or fur felted in with the rest of the materials. There seems to be a good deal of difference in the structure of the nest, not so much according to the species, as to the climate. The northern-built nests are usually found to be more compactly built, with a greater quantity of soft, warm material, than those of the Loggerhead in the Southern States, which are smaller, more open, and rather loosely woven than closely felted. In such a bulky and rather rude receptacle, though a very substantial one, no fewer than five or six eggs may be deposited, for a Shrike is as much in earnest in these matters as in the other affairs of life. These vary in size, of course, according to the species, the eggs of the Northern Shrike being about 1.10 by 0.80 inches, while those of the White-rumped, or Loggerhead, only measure, on an average, little if any over an inch in length by three-fourths as much in breadth. They are shaped and colored exactly alike, however, being of rounded oval form, quite blunt at the smaller end, and so profusely speckled or marbled all over with various brownish, reddish, and

purplish shades that the greenish-gray ground-color is scarcely perceptible. Should nothing go amiss, it is not long (Audubon says fifteen days in the case of the *borealis*) before the nest is crowded with a clamorous and voracious brood, whose wants are an incessant tax upon the energy and devotion of the parent birds. The care of the youngsters would seem to give them all they can attend to, leaving no time for house-cleaning; for, should you come upon a family of Shrikes, well grown and soon to leave the nest, you would find things in an extremely untidy condition.

One nestful after another being thus turned loose upon the world, the tribe of Shrikes waxes. Being prolific, and having few enemies besides men, they are common birds in most portions of the country, and we readily perceive that they play an important rôle in nature's economy. I must confess that I have not drawn altogether the most flattering picture, even though I have given the doughty warriors full credit for their military operations; and I am therefore the more anxious to show what extremely useful birds they are, from the most practical standpoint possible. So far as the Shrike's relations with ourselves are concerned, the balance is entirely on one side of the ledger. We are enormously in debt to these efficient destroyers of noxious insects and injurious quadrupeds. Though they kill many a bird we should wish to live, the whole result in this regard is practically nothing to offset the check they put in the aggregate upon grasshoppers and other undesirable forms of insect life. Nay, more, the Shrike is entitled to our special thanks and most favorable consideration, for his interference in our behalf against the bird-pest of this country—the European Sparrow. In taking counsel with herself, that she might right the balance of her forces, which we so faultously interfered with when the Sparrow madness seized us, she bethought herself of the Shrikes, and in her own mysterious way she summoned these trusty allies to her aid. The Shrikes, nothing loth, went right to work, and were abating the nuisance very perceptibly, when Bostonese idiocy confronted them and cut short their righteous warfare. Men shot them down in the very acts of destroying Sparrow after Sparrow; at each murderous discharge of the gun, a noble Shrike was martyred in doing his best for the good of the community."

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THE CANADIAN SPORTSMAN AND NATURALIST.

No. 7.

MONTREAL, JULY, 1883.

VOL. III.

WILLIAM COUPER, Editor.

QUERIES.

Is the American Woodcock (*Philohela minor*) found in the Province of Manitoba? We are told that it does not occur there. It is not mentioned by Prof. Macoun, but it is given by Mr. Brodie in his list published in No. 4, Vol. III. of this magazine.

Bonaparte's Gull (*Larus Philadelphica*) is said to nest on islands in inland lakes. Have any of our Canadian Oologists found it so situated this year? Its eggs were *desiderata* in the Smithsonian Institute collection a few years ago.

CANADIAN ORNITHOLOGY.

In this issue, we publish a second review of M. Dionne's late French work on the Birds of Canada. It is unpleasant for us to be compelled to decry the attempts so far made by ambitious writers to produce histories or descriptions of the *avi-fauna* of this Canada of ours, but something must be done to stop the carelessness which is so conspicuous in much of Canadian ornithology. Mr. Chamberlain is correct in saying that "it is time we speak plainly about such things, if our students are to take the standing they should. American ornithologists also say that Canadian writers, as a rule, seem to know nothing about their birds, and write the most puerile trash." There is considerable truth in this statement, and to stop it some one must speak out plainly. We have had several ornithological communications from parties resident in three of the Provinces of the Dominion, but it is impossible for us to vouch for the accuracy of all the matter sent to us for publication—the writers are alone responsible for their statements—but when a wrong is detected we generally form it right. Our office since the

first issue of the magazine, was, and is to make it original regarding Canadian Natural History, to constitute it an authority for future reference, therefore we trust that our correspondents will continue to keep the serial up as a truthful record which it was our purpose it should be.—C.

CANADIAN HYMENOPTERA.

COMPILED BY THE EDITOR.

In vol. I. p. 19 of this magazine, I published a portion of the HYMENOPTERA found on the Island of Montreal. The following is a list of the APIDÆ occurring in Canada up to March, 1879.

CALLIOPSIS flavipes, *Smith*.

NOMADA bisignata, *Say*.

" *armata*, *Sch*.

PHILEREMUS Americanus, *Cresson*.

STELIS? *nitida*, "

CELIOXYS 8-dentata, *Say*.

OSMIA faceta, *Cresson*.

" *atriventris*, "

" *albiventris*, "

" *Hudsonica*, "

" *cognata*, "

" *proxima*, "

" *vicina*, "

" *simillima*, *Smith*.

ALCIDAMEA producta, *Cresson*.

MONUMETHA borealis, "

MEGACHILE melanophæa, *Smith*.

" *frigida*, "

" *latimanus*, *Say*.

" *pugnata*, "

" *bucephala*, *Smith*.

" *mendica*, *Cresson*.

" *relativa*, "

" *centuncularis*, *Linn*.

" *brevis*, *Say*.

MELISSODES desponsa, *Smith*.

" *aurigenia*, *Cresson*.

" *dentiventris*, *Smith*.

" *bomboides*, *Kirby*.

" *abrupta*, *Say*.

APATHUS laboriosus, *Fabr*.

" *Ashtoni*, *Cresson*.

" *citrinus*, *Smith*.

- BOMBUS virginicus*, *Oliv.*
 “ *separatus*, *Cresson.*
 “ *Ridingsii*, “
 “ *vagans*, *Smith.*
 “ *consimilis*, *Cresson.*
 “ *affinis*, “
 “ *perplexus*, “
 “ *borealis*, *Kirby.*
 “ *fervidus*, *Fabr.*
 “ *Pennsylvanicus*, *DeGeer.*
 “ *terricola*, *Kirby.*
 “ *Couperi*, *Cresson*, (Labrador.)
 “ *strenuus*, “
 “ *lacustris*, “
 “ *ternarius*, *Say.*
 “ *pratensis*, *Kirby.*
 “ *Derhamellus*, *Kirby.*

APIS mellifica, *Smith.*

The following species are said to occur in Canada:—

- NOMADA punctata*, *Fabr.*
 “ *armata*, *Cess.* (Nova Scotia.)
CÆLIOXYX funeraria, *Smith.*
BOMBUS hortorum, *Linn.* (Lake Winnipeg.)
 “ *Kirbiellus*, *Curtis.*
 “ *polaris*, “

A DESTRUCTIVE TWO-WINGED FLY.

A few years ago, the late Benjamin Walsh published in the *American Entomologist*, some interesting remarks on the internal and external parasites which were known to him to attack man on this continent. Since then we have to record the occurrence of an insect belonging to the order DIPTERA or two-winged flies, which is said to deposit its eggs in the nostrils of man, especially when he is troubled with catarrh. The fly is said to occur in Canada. Maggots of this fly are called “Screw worms” in Kansas, where it is known to attack horses and cattle, but lately positive evidence has been produced to show that it also lays its eggs in the nostrils of man when it finds him asleep in woods or field. There are circumstances connected with the economy of many of our small insects which will take us a long time to discover. A tree flourishes and produces fruit for a time, but the moment decay is indicated in its trunk, insect parasites appear and in a few years it falls and be-

comes amalgamated with the earth from which it sprang. This is also the case with the human body, the moment that disease attack a portion of it, parasites are hovering near the spot. Therefore it behoves us to study cleanliness especially in regard to the nostrils.

We copy the following account of the hominivorous habits of the fly by F. H. Snow, Lawrence, Kansas, published in “*Psyche*” for March-April, 1883. There is one thing missing, that is, a good illustration of the horrid fly.

The Professor says:—

“I have from time to time had occasion to note the depredations of the screw-worm upon horses and cattle in this state, but until recently have not received positive evidence of its attacks upon human subjects in any locality so far north as Kansas. But early in September, 1882, I received from Mr. S. D. Osborn, the postmaster at Varck, in South-eastern Kansas, specimens “of the worms which came from the nostrils of Milton Carter.” These proved to be the larvæ of *Lucilia mellearia* Fab., the so called “screw-worm.” Upon further inquiry I learned that upwards of one hundred full-grown maggots escaped from the nose of this patient, who finally recovered from the serious illness consequent upon their ravages. I also ascertained that Mr. Carter had long been afflicted with an offensive nasal catarrh, which made his nostrils an attractive place for the oviposition of the fly, and that he had fallen asleep in the woods in the day-time only a few days before the first appearance of the symptoms produced by the presence of the larvæ.

“Several other instances of the attacks of *Lucilia* upon man soon came to my knowledge, most of which led to fatal results. Among these I will select the case attended by Dr. J. B. Britton, of Mapleton, in southeastern Kansas, who reported it in full at the session of the Southeast Kansas District Medical Society in January 1883. From this report I condense the following account: “On the evening of August 22d, 1882, Mr. M. E. Hudson complained of a peculiar sensation at the base of the nose and along the orbital processes, which was first followed by inordinate sneezing, and later by a most excruciating pain over the os frontis, also involving the left superior maxillary. This patient also had

suffered, and was still suffering, from an aggravated form of nasal catarrh. The discharge was quite purulent, of a yellowish color frequently tinged with blood, with a disagreeable odor and at times intolerably offensive. On the 24th there was a profuse discharge of much purulent matter from the nostril and mouth, when all pain instantly subsided. This discharge continued for three days, during which time as much as sixteen ounces escaped, increasing in consistency until it was pure pus. The odor becoming much more offensive, his cough was much more troublesome and fever increased to such an extent as to produce slight delirium for twelve hours. What was thrown off was with much difficulty expectorated, and was sanious, containing microscopic particles of osseous matter together with flakes of plastic exudation. The patient had spoken with difficulty for thirty-six hours and there was much trouble in swallowing. The soft palate had evidently given way and there was an entire inability to protrude the tongue or use it in speech.

"About this time a worm similar to a maggot dropped from his nose. That was the first indication or suspicion that there was anything of the kind present. There was not, as in some other cases reported, any swelling, or movement traceable under the skin, nor was there at any time any complaint of the patient, calculated to lead to a knowledge of their presence. After the appearance of the first, I expected more, and was surprised to see them drop from the nostrils and wiggle from the mouth without any discomfort to the patient until they came in contact with the Schneiderian membrane, when they annoyed him greatly, and every effort was made on his part to expel them; but so soon as expelled, no further trouble was manifested until another would get into the nostril. Every effort was made on my part to discover them under the tissue, but the soft palate being destroyed to a great extent, and the palatine arch apparently lowered, it was with very much difficulty that an examination could be made. The worms were evidently burrowing under the palatine fascia, as it presented a honey-combed appearance and in places patches were totally destroyed as large as a dime [18 mm.]. They continued to drop from the mouth and nose, forced from the nostrils by the efforts of the patient, for the following forty-eight hours, during which time 227 were counted and the estimated number exceeded 300. At

this time the whole of the soft palate was destroyed. The patient lived four days after the last worm came away.

"I put five of the worms in dry earth and in fourteen days from the time they dropped from the nostril there hatched out three flies.

"Upon a very minute and careful examination after death, I was astonished to find that all the tissue covering the cervical vertebrae, as far down as I could see by throwing the head back and compressing the tongue, was wholly destroyed and the vertebrae exposed. The palatine bones broke with the slightest pressure of the finger. The os hyoides was destroyed and the nasal bones loose, only held in position by the superficial fascia.

"My own theory is that the fly deposited the eggs while the patient was asleep, probably the day previous to the peculiar sensation and sneezing first complained of. At that time they had acquired vitality enough to annoy him while in contact with the sound flesh. So soon as they came in contact with the unsound flesh, or that affected with the catarrh, being as it must have been gangrenous, they gave no further trouble."

"Dr. Britton forwarded to me specimens of the fly, bred as above stated which I identified as *Lucilia macellaria* Fab. In order, however, that there might be no possibility of error, I submitted them to Dr. S. W. Williston, of New Haven, Conn., who corroborated this determination and furnished the following notes concerning the species: "The specimens are evidently *Lucilia (Campsomyia) macellaria* Fab., a fly common from the Argentine Republic to Canada, and which from its variations has probably received more specific names (20!) than any other American fly. It belongs to the *Muscidae* (true) and is not far from *Musca*. Their hominivorous propensities have gained for them the synonyms of *Lucilia hominivorax* Coquerel, and *L. hominivorus* Cenic (S. America)."

"In the Peoria (Ill.) Medical Monthly for February 1883, Dr. Joshua Richardson, of Mc-ravia, Iowa, has an article upon "The screw-fly and its ravages," from which I make the following extracts: While travelling in Kansas in the latter part of last August a citizen of this place had the misfortune to receive while asleep a deposit of eggs from this fly. He had been troubled for years with catarrh, hence the attraction to the fly. He returned home a few days after the accident and shortly after began complaining of a bad cold.

Growing rapidly worse I was called to attend him. Monday, my first day, his appearance was that of a man laboring under a severe cold. Had slight congestion of the lungs, and moderate grade of fever. His nose seemed greatly swollen and he complained of a smarting, uneasy feeling in it, and general misery through the head. Gave him treatment to relieve the congestion and fever. Tuesday saw him again. His nose and face were still more swollen, and in addition to the other symptoms he was becoming slightly delirious and complained a great deal of the intense misery and annoyance in his nose and head. A few hours after, I was sent for in haste with the word that something was in his nose. I found on examination a mass of the larvæ of this fly (or "screw-worms" as they are commonly called in the south) completely blocking up one nostril. On touching them they would instantly retreat *en masse* up the nostril. Making a 20 per cent solution of chloroform in sweet milk I made a few injections up both nostrils, which immediately brought away a large number, so that in a few hours I had taken away some 125 of them. By Wednesday evening erysipelas had begun, implicating the nose and neighboring portions of the face. Another physician was called. By continual syringing with a strong antiseptic solution of salicylate of soda, bicarbonate of soda and carbolic acid we hoped to drown out the remaining larvæ. But they had by this time cut their way into so many recesses of the nose and were so firmly attached that we were unable to accomplish much. Finally we resorted to the chloroform injections, which immediately brought away a considerable number. Friday I was able to open up two or three canals that they had cut, extracting several more that had literally packed themselves one after another in these fistulous channels. His speech becoming suddenly much worse, I examined the interior of his mouth and found that a clear-cut opening had been made entirely through the soft palate into his mouth and large enough to insert the end of a common lead pencil. Saturday the few remaining larvæ began changing color and one by one dropped away. On Sunday for the first time hemorrhage from both nostrils took place, which continued at intervals for three days but was not at any time severe. On this day the patient began to improve, the delirium and erysipelas having subsided leaving but little or no annoyance in his head. In a few days he became able to go

about home, and even to walk a distance of half a mile to visit a friend and return. But while there he began complaining of a pain in the neighborhood of his left ear, apparently where the eustachian tube connects with the middle ear. It proved to be an abscess. Being already so reduced by the first attack, he was unable to withstand the second, and died after an illness of nearly three weeks, completely exhausted by his prolonged sufferings. Three days before his death the abscess discharged its contents by the left nostril. The quantity of pus formed was about 2½ ounces [78 grams].

"In all about 250 larvæ were taken away from him during the first attack, and, as the visible results, not only had they cut the hole through the soft palate, but had also eaten the cartilage of the septum of the nose so nearly through as to give him the appearance of having a broken nose. The case occupied, from the first invasion of the fly to its final result, nearly two months. He doubtless would have recovered but for the formation of the abscess, which, from all the symptoms, was caused by one or more of the larvæ, having found their way up the left eustachian tube."

"Dr. Richardson also quotes the Rev. William Dixon, of Green, Clay Co., Kansas, as giving the following account of his own experience:

"While riding in his buggy a few years ago in Texas, a screw-fly attacked him flying up one nostril. He blew it out when it dashed up the other and deposited its eggs before he was able to expel it. Not realizing the danger he did nothing for about three days, when the pain became so great that he hastened to Austin to consult a physician. His soft palate was almost destroyed before the larvæ, over 200 in number, were expelled." This was the only one of twelve cases known to Dr. Richardson in which the patient recovered."

M. DIONNES' "LES OISEAUX DU CANADA."

DEAR SIR,—I cannot but think that in the notice of the above named book, which was published in the June number of this magazine, the reviewer has been more generous to the author than just to the Canadian students of ornithology. It is not quite fair to allow it to be thought that we know so little about our birds that we can not form a correct estimate of such a book, and, while the reviewer has

pointed out several of the errors it contains, he has, I think, failed to place before your readers its utter worthlessness as an authentic work, and will, I fear, assist to spread its mischievous influence rather than prevent it. I need scarcely to remark that I refer entirely to those portions of the book which applies to the bird life of Canada, and not to that which is copied from Dr. Cones' "Key to North American," one of the best and most reliable works ever published. Had M. Dionne been content to translate the "Key," or such portions of it as would be most useful to Canadian students, he would have gained the well-merited thanks of the French-speaking members of the fraternity.

So much of the book being of an excellent character, creditable alike to M. Dionne's industry, skill and good judgment, it is all the more to be regretted that he had not spent the little additional care and labor which was required to make "Les Oiseaux du Canada" a standard authority. But he failed to give the matter the attention its importance demanded, and it is due to students that they be warned against accepting his statements, and also due to those who may be contemplating authorship that they shall be taught that they are assuming a grave responsibility, and can not with impunity publish for scientific facts an array of statements drawn from their imaginations or compiled with indifference to the reliability of their authorities.

M. Dionne's book exhibits clear evidence of the influence of another mischievous work, "The Birds of Canada," by A. M. Ross, M.D., &c., &c., &c., &c. The long list of et ceteras by which this author sought to impress upon his readers his eminent qualifications for writing a standard work did not save it from being dismissed by the English "Zoological Record," with this severe sentence, "The text is valueless." Every one must admit that such books are worse than merely "valueless," for, placed in the hands of young students who cannot discriminate between the good and the bad which they contain, they become misleading. This matter is of such importance that I ask a little space to quote a few examples from these books by way of illustrating their character. I will quote from both, for the one is such a close imitation of the other that the original must be examined to determine the value of the copy.

In the first place, the titles of the books are misleading, for it can not be correctly said of

either that they contain accounts of the birds of Canada as such. Dr. Ross' work refers almost wholly to a part of Ontario, the few references to the maritime Provinces, chiefly drawn from Audubon, and the list of species found in Manitoba and British Columbia, which is appended to the second edition, do not redeem the body of the work from its purely local character, and to give it a title bearing a wider significance is to handicap it with a pretension which its contents will not sustain, and will also cause confusion to inexperienced readers. The same remark will apply with greater force to M. Dionne's work, for he has mentioned only a small portion of the western species, and treats them as if they occurred in the Eastern Provinces, having in the preface stated that he had omitted the *fauna* of Manitoba and British Columbia.

To state, as Dr. Ross does, that the Brown Thrasher "is one of our most common birds," that the House Wren "arrives from the south the first week in May," that the Evening Grosbeak "is a visitor," and to make no further mention of the localities in which they occur, in a book entitled "The Birds of Canada," is calculated to create a false impression; for though all this may apply to Ontario, it does not apply to New Brunswick or Nova Scotia, as these birds have never been found there.

The only remark which M. Dionne makes about the distribution of the Olive-backed Thrush is "Cette espèce est rare aux environs de Québec." As a matter of fact, I have found this species common throughout New Brunswick, at no locality more so than at Madawaska, on the Quebec border; and it is also common at Lennoxville. Besides these facts, we have Mr. Wintle's report of its occurrence near Montreal, and Mr. Merriam's report of it being "not uncommon" near the Godbout; the name is on the Morden-Saunders list of Western Ontario, and in Mr. McIlwraith's old list of Hamilton species; Mr. J. Matthew Jones reports it common in Nova Scotia, and Prof. Macoun found it in Manitoba, while it has been traced west to the Pacific slope and north to the Arctic. With such information easy of access, it is quite inexcusable to imply that the only locality in which the bird is known to occur in Canada is near Quebec; and when an author will so carelessly make statements which we know to be incorrect, we cannot be expected to rely

upon those he may make for which we must accept his unsupported authority.

That many of the statements made would be correct if applied to prescribed districts I will not dispute; but I submit it is a mistake to suppose that what applies to the *fauna* of one limited locality must perforce be equally applicable to the entire Dominion. Each *faunal* area, and there are a number of such divisions in Canada, has a bird-life peculiar to itself; even though some species having a much wider range of distribution than others, are found in several areas. But there are in these books other errors of a more serious nature than the question of distribution. For instance, Dr. Ross gives the color of the eggs of the Olive-backed Thrush as reddish brown, while leading authorities have pronounced them greenish blue, speckled with brownish. The same author states that the Hudson Bay Tit "nests in a shrub; eggs four; pure white." Not one of these details are correct. This species invariably make an excavation into a dead stump or living tree, and lay from five to ten eggs, which Dr. Brewer, having before him the large series in the Smithsonian collection, described as being of a white ground color, but having reddish brown spots grouped in a ring around the larger end.

In his description of the plumage of the Olive-backed Thrush, M. Dionne states that the breast, throat and chin are of a pale brownish yellow, while the best authorities give the color of these parts as white, with a buffy tinge, and marked with dark spots.

In the matter of habits, this same author makes such remarks as that the Blue Yellow-backed Warbler delights in bushes and lower branches of the trees, but a number of careful and experienced observers have unanimously recorded this bird's preference for the highest branches of the highest trees.

Cuvier's Kinglet is found in both books, and may be taken as a fair sample of the carelessness which is so conspicuous. Dr. Ross records that the species occurs in Canada in spring and fall, and M. Dionne repeats the record and attempts to throw all responsibility from his own shoulders (which, by the way, he does very seldom, making most improbable statements upon his own unsupported authority) by quoting Dr. Ross; but he should have known that, to say the least, the occurrence of the bird was so very doubtful that it should not be placed on any list unless upon the most

unquestionable authority, and then the date and locality as well as the name of the collection should have been given to make the record acceptable by scientists. The only example of this Kinglet which has been so far reliably recorded was taken by Audubon near the Schuylkill River, Penn., in June, 1812. Mr. Ridgway has retained the name in the Smithsonian catalogue on this authority, but Dr. Coues has not placed it on his "Check List."

Just where M. Dionne gathered his information that Dr. Coues considers this species a variety of *calendulus* is not apparent. There is no such statement in the "Key," the only one of Dr. Coues' works which M. Dionne mentions among his authorities; and in "Birds of the North-west," *Cuvieri* is given as a doubtful synonym of *satrapa*, while in "Birds of the Colorado Valley" it is not mentioned.

As I have before remarked, references are made in these books to numerous western species, without any indication of their range being given. Macgillivray's Warbler will serve as an example of these. The most eastern limit of the range of this species which is authentically recorded, is Dr. Cooper's report of finding it at Fort Laramie, in Wyoming Territory. Yet Dr. Ross makes the unqualified statement that "it breeds in Canada," by which he must mean, to be consistent with his other records, that it breeds in Ontario.

M. Dionne follows with an unsupported assertion, changed, by way of appearing original, to "rarely seen in Canada," and he copies the pattern so closely as to repeat an error which Dr. Ross made in describing the eggs as "flesh-colored." The best authorities describe them as of a pinkish-white ground color, but "marked and spotted with purple, lilac, reddish-brown and dark brown approaching black."

Turning to the Owls, we find that M. Dionne, on page 131, states: "Nos espèces sont toutes sédentaires en Canada"; and, again, in his account of the Barred Owl, "Cette chouette est commune à l'automne et disparaît au printemps pour aller faire sa ponte à la baie d'Hudson." These two statements do not harmonize and neither is correct. By "sedentary" species ornithologists mean those which remain during the entire year in one locality, and it is quite certain that in this sense neither the Snowy Owl, the great Gray Owl, the Hawk Owl, nor Richardson's Owl

can be called "sedentary" in Canada, being mostly winter visitors. The Barred Owl, on the other hand, is given by Mr. Vennor as universally diffused over the greater portion of British America, and is a resident species in most localities in Canada. It is, as a rule, a "resident" wherever found, and in the breeding season is much more abundant in the Southern States than at Hudson Bay.

On an introductory page, M. Dionne has given a long list of "ouvrage consultés," but he must have read some of them, at least, to very little purpose. Had he, for instance, read with any care the Bulletins of the Nuttall Ornithological Club he would have seen in the number for April, 1878, on page 52, the record of Dr. T. M. Brewer that "It is now universally conceded that not a specimen (of the Crested Grebe) is in existence of American origin, and that there is no authentic record of the capture of a single specimen in America." It was excusable in Dr. Ross putting the name of this bird in his list, as the mistake in identification had not then been published, but there is no excuse for M. Dionne blindly following him.

It would take a large volume to point out all the errors which these two authors have made. I have picked out these few quite at random, but they will suffice to show how little reliance can be placed in anything which the books contain. Had they been content to publish what they had observed, or could have compiled from authentic sources, these writers would have rendered a valuable service to Canadian students and ornithologists at large, but the publication of these books must bring a blush to the cheek of every Canadian who realizes that those claiming to be eminent among our scientists are responsible for such miserable failures. It is time such work was stopped.

The system of nomenclature and classification adopted for "Les Oiseaux du Canada" is that of Dr. Coues, which M. Dionne informs his readers is in his opinion the most correct and the most generally acknowledged. Well, it is encouraging to learn that he is so well informed in the higher branches of ornithology that he can form a correct opinion of the merits and demerits of the rival systems; but if he thinks that Dr. Coues' system is the most generally used he is in error.

The great body of American writers use the system prepared by Mr. Ridgway for the Smithsonian Institution, and which differs

very materially from Dr. Coues', and, though I freely admit that I can not judge of the merits of either, I will take the liberty of advising all Canadian students and writers to use Mr. Ridgway's system and avoid the confusion which must arise if that prepared by Dr. Coues should come into more general use.

Respectfully yours,

MONTAGUE CHAMBERLAIN.

St. Johns, N.B.

THE MEETING OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE IN CANADA.

Over four hundred members of the above Association have pledged themselves to attend the meeting in Montreal next year.

"Science" says:—"In so far as accommodations for the meeting is concerned, and funds for its expenses, there can be no doubt that Montreal can entertain the association as well as any of the British cities in which it ordinarily meets; and its geographical position and facilities for access and for communication with all parts of Canada, the Northern States and the West, present many attractions; while there is reason to hope that a meeting of the British Association in Montreal would be attended not only by all interested in science in Canada, but by large numbers of the scientific workers of the United States. The experience acquired last year in entertaining the American Association will also afford very valuable guidance." We understand that the difficulties in regard to the transportation of so large a body across the Atlantic are now settled, and all parties interested here have put their shoulders to the wheel in order to give our scientific brethren a cordial welcome. We quote also from "Science," the editor remarking "that in the present year the meeting of the American Association, at Minneapolis, is early (Aug. 17); while that of the British Association at Southport, which is, besides, in the immediate vicinity of Liverpool, is unusually late (Sept. 19). This will allow members of the American Association to attend both meetings; and it is stated that the retiring president of the American Association, and possibly others of its members, may avail themselves of this privilege. This may possibly permit arrangements to be made which might substantially unite the meetings

of the two associations in 1884, and so prepare for an international meeting in the future. If the meeting of the American Association for 1884 can be fixed for some north-eastern city, sufficiently near Montreal, and can be timed so as to occur a week before or after that of the British Association, there can be no doubt that a great number of members of the latter body would take advantage of the opportunity to enjoy the companionship of their American *confreres*; while, on the other hand, many of these would gladly spend a few days at the meeting of the British Association. In this way it would seem that a greater benefit to science might result than even from an international meeting. There would be time for the complete transaction of the business of both associations. Neither would suffer either pecuniarily or in the value of its proceedings; and there would be the best possible opportunity for interchange of ideas between the scientific men of the United States, Great Britain and Canada. Nor is it unlikely that some scientific workers from the continent of Europe and elsewhere may be attracted by a combination so unusual. It may thus be hoped that the proposed meeting of the British Association in Canada may not only be one of the most successful that this mother of associations has held, but may inaugurate an epoch of renewed activity and progress in the widely-spread scientific work of the two great associations of the English-speaking race."

HUXLEY'S COD-FISH MOUNTAIN.

Professor Huxley says that a good fishing ground will yield more food in one week than an acre of the best land in a year. At the International Fisheries Exhibition in London, he drew a vivid picture of the moving "Mountain of Cod," one hundred and twenty to one hundred and thirty feet in height, which for two months in every year moves westward and southward past the Norwegian Coast. Every square mile of this colossal column of fish contains one hundred and twenty millions of fish, consuming every week, when on short rations, no fewer than eight hundred and forty millions of herrings. The whole catch of the Norwegian fisheries never exceeds in a year more than half a square mile of this "Cod Mountain," and one week's supply of the herrings needed to keep that area of Cod from

starving. London might be victualled with herring for a year on one day's consumption of the uncaught Cod.

REVIEW.

We have before us a General Index to the Thirteen Annual Reports of the Entomological Society of the Province of Ontario. The matter is compiled by Edmund Baynes-Reed, Sec.-Treas. of the Society, who deserves credit for the work, which is systematically arranged and will be useful to those who possess the Reports since 1870. Attempts are made to give English names to our insects; indeed, we would be well pleased to see all the species in this Index thus supplied; but we decidedly object to the duplication of an English name to one insect, or to two species, as we notice this to be the case in the Red-legged Locust, which is called the "Canadian Locust." *Anthomyia ceparum* and *Ortalis plexa* are called Onion flies, and three species of *Cantharis* are called Spanish Blister Beetles. We would prefer to call *C. scrutator* the Green Calasoma, and *C. calidum* the Gold-spotted Calasoma. Our Papilios and other Butterflies should have appropriate English names, and something must be done ere long to overcome this difficulty. The British insects have English names by which they are recognized by the unscientific collector, and the North American species should be commonly known by names applicable to them which may be taken from their forms or food plants. This Index is, however, a good beginning. In conclusion, we may remark that *Rhodites radicum* is placed under the head of DIPTERA.—C.

DISTEMPER IN DOGS.

We have received a pamphlet from the author, Mr. S. E. Wheeler, 133 Bleury street, Montreal, on Distemper in Dogs, its symptoms and cure. To those who wish to keep their dogs healthy and vigorous, the instructions given by Mr. Wheeler are valuable. He seems to possess a thorough knowledge of the diseases of these animals. The price of the pamphlet is 20 cents.

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VOL. III.

WILLIAM COUPER, Editor.

PARASITES ON TELEA POLYPHEMUS.

In one of the popular papers on Entomology by my esteemed friend Mr. W. Saunders of London, Ontario,* he says:—"This insect (*T. polyphemus*) is subject to the attack of many foes, particularly while in the larval state. A large number fall a prey to insectivorous birds, and they also have insect enemies. A large ichneumon fly *Ophion macrurum*, is a special and dangerous foe. This active creature may often be seen in summer on the wing, searching among the leaves of shrubs and trees for her prey. When found, she watches her opportunity, and places quickly upon the skin of her victim, a small oval white egg, securely fastened by a small quantity of glutinous substance attached to it. This is repeated until eight or ten eggs are placed, which in a few days hatch, when the tiny worms pierce through the skin of the caterpillar and begin to feed on the fatty portions within. The *polyphemus* caterpillar continues to feed and grow, and usually lives long enough to make its cocoon, when consumed by the parasites, it dies; in the meantime the ichneumons, having completed their growth, change to chrysalides within the cocoon, and the following summer, in place of the handsome moth, there issues a crop of ichneumon flies." The italics are mine. The insect above described and illustrated (fig. 11, Rep. 1882) by Mr. Saunders, is not correct. The matter refers to a much smaller one belonging to another genus (*Cryptus nunciatus*, Say.) the most common and destructive parasite on *T. polyphemus*. *Ophion macrurum* deposits but one egg on a caterpillar, and as soon as the parasite devours it, the *Ophion* spins a large oblong dark cocoon within that formed by the caterpillar of *polyphemus*. Cocoons of this moth which I have collected last season, contained about thirty specimens of *Cryptus nunciatus* of both sexes, and I also found an undetermined species of *Hemeteles* inclosed in the same cocoon; the latter may be a parasite on *Cryptus*. The species of *Ophion* occurring in Canada, are yet to be studied.—C.

* Report of the Entomological Society of Ontario for the year 1882, page 17.

AMERICAN ORNITHOLOGISTS' UNION.

We have received the following circular, signed by J. A. Allen, Editor of the *Nuttall Bulletin*; Ellhott Coues, Assoc-Editor of the *Nuttall Bulletin* and William Brewster, President of the Nuttall Club, calling "a Convention of American Ornithologists, to be held in New York City, beginning on September 26th, 1883, for the purpose of founding an AMERICAN ORNITHOLOGISTS' UNION, upon a basis similar to that of the 'British Ornithologists' Union.'"

"The object of the UNION will be the promotion of social and scientific intercourse between American Ornithologists, and their co-operation in whatever may tend to the advancement of Ornithology in North America. A special object, which it is expected will at once engage the attention of the Union, will be the revision of the current lists of North American Birds, to the end of adopting a uniform system of classification and nomenclature, based on the views of a majority of the Union, and carrying the authority of the Union. Other important matters will be doubtless presented for consideration at the first meeting.

"It is proposed to hold meetings at least once annually, at such times and places as may be hereafter determined, for the reading of papers, the discussion of such matters as may be brought before the Union, and the transaction of the usual business of a scientific society.

"Those who attend the first meeting will be considered *ipso facto* Founders of the AMERICAN ORNITHOLOGISTS' UNION. Active and Corresponding Members may be elected in due course after organization of the Union, under such rules as may be established for increase of membership. Details of organization will be considered at the first meeting."

Canadian Ornithologists who propose to attend the first meeting, please so signify to any one of the above gentlemen.

It gives us pleasure to record the fact that our ornithological neighbours of Cambridge and Washington have decided to form a Union similar to that which exists in Great Britain. Many important matters connected with

American Ornithology will be thoroughly arranged and settled forever by the majority of the members of this Union. Two current lists of N. A. Birds cannot be much longer extant, therefore, it is necessary that a uniform official system of classification and nomenclature should exist which would doubtless be recognized and adopted by every ornithological student in North America. We wish success to this Union; its promoters are hosts in themselves—a sufficient guarantee that their object will be attained.—C.

A VALUABLE DONATION.

Parties visiting the collections of the Natural History Society of Montreal will doubtless admire a large English-made lighted case of British *Rasores*, comprising pairs of each species. They are tastefully mounted on artificial rock by Mr. Reuben Webster, taxidermist, Sheffield. The birds are life-like, and form a very valuable and attractive feature to the Society's Ornithological collection. Those interested should examine this group of British partridge and grouse. Among the latter are a pair of the rare capercaillie in very natural positions. They were presented by A. A. Jowitt, Esq., senior partner in the firm of Messrs. T. Jowitt & Sons of Sheffield, England, through his friends Messrs. Frothingham and Workman of this city. This donation, we are sure, will be appreciated not only by the members of the Society but by all lovers of natural history.—C.

ORNITHOLOGICAL NOTES.

DEAR SIR—It is a repeated pleasure to me as each succeeding number of the *Canadian Sportsman and Naturalist* comes to hand, bringing information new and interesting, concerning the lovely creatures which form the subjects of our favourite study. I feel my inability to write anything that will ornament the pages of your magazine, while I read with delight the articles from pens of able authors, as I think do all those who are in search of a knowledge of the life histories of the quadrupeds, birds, &c., of our country. My sincere desire in sending a letter for publication is to help to increase the knowledge of natural history, and if anything I write is new information to my brother Ornithologists and Oologists, I shall be greatly gratified. Early on the morning of May 26th, 1879, I started into the fields and woods of our neighbourhood in quest of desirable specimens

of all kinds. When I started the sun had just risen brightly and all vegetation was yet moist with dew. Soon after entering a field about half a mile from our house, I came amongst some brier and red raspberry bushes scattered about. After walking a little way a female golden-winged warbler *Helminthophaga chrysoptera* started with sharp chipping notes from within a yard of my feet. Upon glancing down, I saw what at a short distance appeared to be a bunch of red leaves sunk in the grass at the roots of three little raspberry bushes. No other tree leaves were on the ground near the nest, which showed clearly that the birds had carried all the materials which formed their little house. The nest was very bulky, considering the small size of the builder. Fully two-thirds of the leaves fell from the outside of the nest before I reached home with it. The four eggs and also one of the cowbird which it contained were fresh. This is the nest and eggs which I sent to you to be described.* The two damaged eggs were broken by the box containing them accidentally falling from a shelf. Before taking the prize, I stood by and watched the actions of the parent birds. The female fluttered from one dewy bush to another for a few minutes, all the time uttering rapidly her note of alarm, when suddenly her mate appeared; but he, heartless little creature, instead of joining in the defence, darted at the female and fiercely pursued her hither and thither, regardless of her cries of anguish and grief, until both were lost to view. In a few moments the female again returned and behaved exactly as before. She would flutter along as if wounded, alighting on a bush within three or four yards of me and instantly leaving it again, moving away as she came, seemingly anxious to entice me in pursuit of her, instinctively endeavouring to lead me away from the spot where the objects of her affection were laid. So beseeching were the actions of this tiny bird that I had to harden my heart before I could take the nest away. I reasoned thus:—Perhaps if I leave this nest, some carnivorous animal or bird which the Creator has formed with egg devouring propensities, will find it out and destroy them. The bird would not forget her loss a bit sooner than if I took

*The eggs, four in number, do not differ in size and shape from others of this family. The average measurements are .65-1.00, colour white, ground marked with reddish brown spots and blotches of different shades, the larger ends being most thickly marked. The markings are very irregular in size, shade and distribution only one of the eggs having the small end immaculate.

them, and the valuable specimens would be lost to science; besides are not all the objects of nature created for the happiness, pleasure, and benefit of man. The ewe has as much affection for her lamb as a wild bird for her nest and eggs, but what man considers it cruel to kill the lamb when it is yet barely old enough for food? About the end of May, 1879, I found two more nests of the golden-winged warbler in a willow swamp. One nest was pulled out of the place where it was built and apparently had been robbed by some depredating animal. The other was to all appearance a completed nest without eggs. A few days later it contained one egg. A heavy rain storm occurred on June 6th; I visited the nest next day and found it half submerged; it contained two eggs which I took. I never saw the parent birds near this nest, but no person can mistake one after once knowing them; they are so different from that of any other bird, and the four nests I have seen are all exactly similar in material, construction, and situation. I have seen the young of this species late in June following their parents and clamoring for food, but found no more of their nests until this season, although the bird is quite common here. Between the willow swamp in which the two last described nests were found and the woods is a rough field containing stumps and many briars. A friend named H. P. Attwater and I were hunting in the field one day last May; I saw a pair of these warblers, and wanting a female specimen, I fired at this one with a charge of dust shot from my five shot 22 calibre repeating gun which I use for small birds. Unaccountably I missed the bird, but while watching to ascertain if it was wounded, I concluded by its actions that it had a nest near by, but all search just there proved fruitless. I had told Mr. Attwater that the nest would appear like a large ball of yellow leaves at the root of some little bush and quite exposed. We had separated and started towards the willows. After proceeding about sixty yards, my friend called me saying he had found the nest; it was completed but contained no eggs. We both decided to shoot at no more golden-wings in that locality until this bird laid her eggs. On June 3rd, the nest contained two eggs of this warbler and two of the cowbird, these last I removed, otherwise the bird would have laid no more of her own in the nest. June 6th, I found her sitting on four eggs; she allowed me to almost catch her before leaving

the nest. How pretty she looked sunk in the deep nest; her bill and tail pointing upward. The yellow of the crown and wing markings were beautifully blended with its pure blue gray plumage. After leaving the nest she behaved similar to the female of the first nest described, except that the male did not appear. None of these nests were built with any attempt at concealment.

Yours faithfully,
Hyde Park, Ont. JOHN A. MORDEN.

INTERNATIONAL FISHERIES EXHIBITION, LONDON 1883.

CONFERENCE ON JUNE 21, 1883.

The Marquis of Exeter in the chair said "the Conference would to-day be invited to give their attention to another branch of the great question of our fisheries, one which, though nearer home, and perhaps less exciting—for it involved no danger to either life or limb—was of great importance, and to many persons formed a most interesting pursuit. He alluded to the attempts which had been made to increase the value of our fisheries by artificial breeding and by importation; and they were much favoured in having the subject opened with a paper by Sir James G. Maitland, Bart., who had devoted a great deal of time and energy to fish culture."

We insert a portion of Sir James G. Maitland's paper on

"THE CULTURE OF SALMONIDAE AND THE ACCLIMATIZATION OF FRESHWATER FISH."

The culture of Salmonidae properly understood embraces not only their artificial propagation, but also the production of their food; the regulation of their ascent to their spawning beds and of their descent to their feeding grounds; the manner of their capture and their rapid and economic conveyance to market; just as much as the culture of corn is understood to mean not merely the sowing, but every step from the preparation of the seed bed to the marketing of the harvest.

The acclimatization of freshwater fish I will consider with special reference to the Salmonidae, and attempt to foreshadow the results of the importation of some of the best known foreign species.

After describing the artificial propagation of Salmonidae, the hatching house; water, its temperature, and the apparatus employed in hatching salmon, Sir J. G. Maitland says:—

"I will now consider the Hatchery as a

factor in the cultivation of migratory Salmonidae, restricting myself for the present to those species placed by Dr. Gunther in the group *Salmones* either with a wide geographical range, as *salar*, *trutta*, and *cambracus*, or limited to Great Britain and Ireland, as *brachypomo* and *gallivensis*, merely pointing out that while touching on the general conditions common to the increase of the above named species, the extermination of the Bull Trout on the Tweed and the Sea Trout on the Forth forms a very serious point to discuss in treating of the culture of the Salmon, and that the best results can only be obtained by the careful protection and artificial production of the species best suited to each particular district. The objects here are to increase *Salmones* whose pastures are in the sea, and whose nurseries are in the rivers. The size of the river has no fixed relation to the number and weight of fish caught in its estuary and contiguous seaboard, and if a very large number of smolts were annually turned in immediately above the tidal waters the stock of *Salmones* would be increased by a proportion of the number turned in, fixed only by the conditions of food and of natural enemies in the estuary and adjoining sea. I do not mean to say for an instant that all the fish reaching maturity would return or attempt to return to the mouth of the river in which they were liberated as smolts, but I think that the evidence tends to show that most of them would do so. The question at this point resolves itself into a matter of pounds, shillings, and pence. Salmon smolts of two years old can now be raised at less than sixpence apiece, and Salmon in the estuary on their return are probably worth on an average five shillings each; rent and the expense of nets, wages, and rates probably add another five shillings, of course if there was a much increased take the proportion to each fish would be less and all the fish that return to the estuary are not caught, but it will be sufficient for our purpose if we assume that a Salmon on his road to destruction is worth while still free five shillings two years after it has been liberated as a smolt; if, therefore, 10 per cent. of the smolts turned in are caught two years afterwards no profit will result, for the increase would only equal the first cost, and the interest on the outlay would be nil. The old idea in this country was to turn out young fish big enough (and big enough does not necessarily mean sufficiently educated) to

take care of themselves. The results from the Stormontfield experiment at first, when everything was new and in working order, were sufficiently marked; but they have not been permanent, and if pisciculture had achieved no more, Salmon culture, in this country at least, would be an interesting exotic, with magnificent results in some cases, far oftener with none; but fortunately it is not necessary to depend on two-year-old smolts for the future increase of our Salmon fisheries. Mr. Spencer Baird, who I am glad to see so ably represented at this Exhibition, in a letter to the Commission of Fisheries of the Dominion of Canada, refers to the magnificent increase of Salmon in California, an increase in five years from five to fifteen million pound weight in one river, an expenditure of merely two million Salmon fry per annum, which in this country would entail less than a thousand a year after making a full allowance for all expenses. But stocking with fry or with smolts is but a small portion of the great question; parts of some of our Salmon rivers are too fouled by pollution to rear fry after they are liberated; it is only by adapting the means to the end that Salmon culture can reach the highest degree of success. In many parts of the country where the pollution is only moderate, we can meet it by taking advantage of the pure water above or by turning smolts in directly above the tidal waters, but I am certain the surest remedy for pollution is to make pure water pay. It is easier to shake an industry to its foundation than to put something better in its place, and if, through fish culture, pure streams and more plentiful food would displace the black sewers of our midlands without the intervention of harassing legislation, fish culturists will not have laboured in vain. The Hatchery can supply eyed ova for the redds and fry for the shallows, and ponds should be constructed near the Hatching-house for yearlings, but where it is necessary to stock with smolts ponds for the purpose must be constructed near the head of the estuary, as the carriage of two-year-old samlets is neither easy nor economical. The time that intervenes between the smolt just entering the tidal water and its first return towards the river varies considerably on the east coast of Scotland; two summers may sometimes intervene, and we must be careful not to assume that all fish return or attempt to return in the grilse stage, for I have found in the case of the Lochleven

Trout only a small proportion spawn in the corresponding state. But whatever the time is we know that his growth is most rapid, and his sea food must be studied before much further advance can be made in Salmon culture; garvies and young herring probably form a great portion of his food, but whatever it be his paths in the sea are as well-marked, and to some fishermen, alas, as well known, as in the river. Trammels in the sea are successfully dropped by east coast fishing boats on their way out and lifted on their return. The food of Salmon at sea may possibly be influenced by the modes of fishing. Boats year by year go farther north and farther to sea for their Herrings; the fishing grounds are slowly but surely receding from the shore. It is too early yet to foreshadow the results, it may be that food inshore grows more plentiful now that the herrings are further out, or it may be that the herrings are further out because the inshore food has decreased, it may be, and to a certain extent it must be, a matter of changing currents and temperature; but what I wish to impress in this paper is that the sea food of the migratory Salmones forms a very necessary preliminary study to the great question of Salmon culture. A diagram expressing the art of Salmon culture would contain no broad, hard, rectangular lines, no vivid colouring easy to be understood, but flowing curves traced by the ever varying intensity of the now few now many circumstances whose combination constitute the problem of the migratory Salmones. Temperature and food are here, as with the nonmigratory species, the principal factors. The mode of captures and obstructions in rivers also weigh heavily against the increase of Salmon. But when one of our watersheds is sufficiently artificially stocked so that the advantages of the process are brought clearly and directly before the public an alteration in the modes of legal capture will assuredly follow. Of obstructions in the river it is difficult to treat; many upper proprietors prefer good Trout fishing to the pleasure of dragging about a few kelt in spring, and it cannot be too strongly impressed that Trout are most destructive to Salmon spawn, and that Salmon in their turn are after spawning most destructive to Trout. I am aware it is very commonly held that Salmon do not feed in fresh water, probably because in common with all large-oared Salmonidæ the ovaries for from two to eight weeks completely fill the cavity of the

abdomen, and should the fish yield to hunger during this time the freshly swallowed food causes the immediate extrusion of the ova. If Salmon never fed in fresh water a well-mended kelt would be a superfluous expression in the parlance of fishermen. The deduction as to kelt in certain parts of the rivers is obvious. Obstructions in the river will interfere little with young fish artificially bred descending to the sea, although they are often fatal to the ascent of spawning fish. Returning to the artificial propagation of salmon, the selection of breeders is very important, eggs from young fish being far smaller in size and the fry hatched from them more delicate than is the case with ova spawned from mature breeders. I think it therefore necessary that the Salmon should be caught and selected as soon as the rod fishing closes, as by selecting the best hen fish the future stock of the water will be much improved. The non-migratory Salmones in this country are classed by Doctor Gunther under the following species—*S. fario*: *ferox*: *Gilleroo nigri-pinnis*; *orcadensis* and *levenensis*, but probably with the exception of the *S. levenensis*, which more nearly approaches a marine form, these are all more or less permanent varieties of *fario*; and their fry, at least those produced under artificial conditions, are more easily reared than the fry of the migratory species. Their cultivation may be said to consist in the selection of the oldest females for breeding purposes, in the artificial incubation of the ova and the rearing of the fry; beyond this their culture resolves itself into a question of habitat and food, of habitat by choosing the species or variety best suited to the ends in view, and of food, for it is only by increasing the food supply in the water that the heaviest weight per acre and the most delicate quality of the flesh can be produced. The cultivation of the food supply in fresh water is effected by the reduction of coarse consumers of food who come in competition with the Salmones, by the cultivation, introduction, and acclimatization of fish whose value as food for Salmones is greater than the value of the sustenance they themselves derive from the water, as, for instance, the Char of Loch Rannoch, who subsist almost entirely on the *daphnæ pulix*. The smelt, and some of the white fish also, may be the link in the chain which will bind the land-locked salmon to our northern lakes, and prove a very disturbing weight in the scales on the side of the upper proprietors on waters now tenanted by

the migratory Salmonidae. I have only just commenced the construction of a botanical pond to enable me to study water plants as herbage for molluscs, shelter for *grammari*, and the natural production of myriads, of *ontromostrica*. On the sea-shore of the Western Highlands if the kelp be not regularly cut, or in other words rudely cultivated, for cutting is most assuredly a process in cultivation, the whelks and bukkies decrease on account of the want of the young tender shoots of seaweed, and the fishing in the neighbourhood is sensibly diminished. From this it is easy to understand what a great future may be opened out by the systematic culture of water plants in our inland waters. Food limits the culture of non-migratory Salmonidae, therefore our study must be where to grow it, how to grow it, when to grow it, and what to grow. In lakes some shoal swimming fish is essential to the growth of the large species of non-migrating Salmonidae. Since the Char have disappeared from Lochleven in the first quarter of the present century, the ten pound Trout in that loch have passed into the realms of romance. Acclimatization here steps in; either the freshwater Smelt of America or our own *Osmerus eperlanus*, which I have successfully hatched and am now rearing in fresh water, if introduced into a Highland loch, for instance, Loch Tay, would enable it to carry a very heavy crop of some of the larger inland species, for instance, the landlocked Salmon of Loch Werner in Sweden, or the *S. sebago* of America; but we must not conclude that the acclimatization of every species is in all cases desirable, for if the Black Bass were introduced into the Tay, and the Pike Perch allowed to sport wherever he listed, even were the sport with the new comers at all commensurate with the highly-coloured descriptions which we have read, it will hardly compensate for a troutless river, and a salmonless estuary. There may be parts of the country where the Pike Perch would form a desirable addition to the local fauna, but I cannot conceive the Black Bass, who is only at his best in waters essentially fitted for Salmonidae, to be other than a most dangerous intruder. The Colorado beetle boasts, I believe, of a special Act of Parliament, and I do think the introduction of strange and dangerous species of fish should only be attempted under State control. The *S. sebago*, should he retain in this country his non-migratory instincts, would probably be a splendid fish for the

Thames, and if used in the upper parts of the Severn would introduce a new and important element in the question of the respective rights of upper and lower proprietors. It is not for the public good that this should be done, for this fish would probably be able to hold the spawning grounds from all comers, and a rapid decrease of the migratory species would be the result, and if it be urged that a lake species would not localize itself to the upper portions of our larger rivers, still if crossed with a British variety, such as *S. leeuwenenses*, it in all probability would do so. The acclimatization of the Corregoni, of which there are many species, all of which can be easily transported as alevins in my opinion, only to be considered as a factor in the production of food for more valuable Salmonidae. If we had the great American lakes, no doubt the large white fish of Canada would, if introduced, form a valuable article of popular food, but our space in this island is too confined to enable us to deal with other than the best we can have, and I doubt, except in a few solitary cases, if any of the Corregoni fall under this head."

Mr. WILMOT (Commissioner for Canada) said he rose with great pleasure to move a vote of thanks to Sir James Maitland for the very lucid and instructive paper he had read, for he felt satisfied that much benefit would be derived from it. He was a deep lover of the science of fish culture, believing it to be one of the means by which the population of the earth hereafter would derive much benefit in the way of food and wealth. It was well known that the waters of almost every country which had been largely inhabited had become very scarce of fish, but this result was brought by the greed and avarice of mankind almost entirely, not in consequence of the predatory habits of other fish which frequented the same waters. In any new country an abundance of fish was to be found in the rivers and waters, showing that the balance of nature was evidently correct; that though fish fed on fish, they did not exterminate one another; but the moment man stepped in with his engines of destruction, the fish were reduced to such an extent that this great International Exhibition had been established for the purpose of devising means whereby this description of food could be increased. He regretted to find that, to some extent, there was a difference of opinion with regard to the means to be adopted to this end, but, for his part, he

advocated the protection of fish in every possible way, as well as of assistance to those engaged in artificial production. In Canada this subject was of very great importance. It was now some years ago since artificial culture was introduced by himself, with the recognition of the Government, and now they stood second to no other country with regard to it. The number of Salmon they turned out annually was not exceeded by any other country in the world. During the last two years from thirty-five to forty millions of Salmonidae had been turned into the waters of Canada through the artificial process, and, though there were no doubt sceptics and others who were inimical to the science of fish culture, he thought that could only arise from ignorance of the benefits to be derived from it. At first sight it seemed extraordinary that fish could be produced by artificial means; but it was a most simple process when understood. Fish were so prolific, that man with a little ingenuity could produce from them far more than nature could herself, because it was a well known fact that large quantities of the eggs of the fish family were destroyed by other species. This was the ordained law; it was intended that fish should live on fish, because if all the eggs of fish were permitted to hatch out, there would be no room in the waters for them. Consequently, nature had provided wisely that fish should live on one another, and this being the case, large numbers of ova must be consumed. Under artificial culture, however, where the egg was protected from its enemies, a larger percentage could be brought to maturity than by the natural process. Hence, if it could be shown that 75 per cent. of the eggs could produce living fish, the system ought to be encouraged by all intelligent people. Sir James Maitland had gone into the matter in a most lucid and instructive manner, and there was no doubt that when the paper was disseminated it would do a vast amount of good. The only difficulty that he saw was, that it did not appear to go hand in hand with the ideas of some scientific gentlemen, who maintained that protection was not necessary to some of our fish. He contended, however, that if an intelligent country considered fish culture of service at all, it should also adopt every possible mode of protecting the fish. It would be no use for a pisciculturist to trouble himself to reproduce fish in great numbers if the intelligence and legislation of the country did not protect that which had been produced, and

if every one were allowed to fish without any control. It seemed to him, therefore, that it behoved all who were interested in this matter to join in every possible measure to enhance the production of fish, either by natural or artificial means, and also to protect the fish afterwards. Nearly every civilized country possessed laws for the purpose of protecting fish; and when some gentlemen came forward and said that fish could not be exterminated, the consequence must be that all these protective laws were a mistake, and that every one should be allowed to kill and eat as he pleased. He maintained, on the other hand, that it was the duty of the legislature of every intelligent country to suppress intemperance of all kinds, not only in the matter of liquors, but in killing fish; and to pass judicious laws for the benefit of mankind. If any law were more judicious than another, it was that the waters should be protected from the inordinate destruction of man, in order that fish might be produced in larger numbers, both as a luxury for the rich and for the benefit of the poor. He felt that he was treading on somewhat delicate ground in giving expression to these sentiments, but as this was the first opportunity he had had, he felt it his duty to express publicly the strong conviction which he entertained on this subject.

Professor HUXLEY begged leave to second the vote of thanks which had been so well moved by his friend Mr. Wilmot. Unfortunately, he had not had an opportunity of seeing Sir James Maitland's establishment at Howietown, but he had frequently been favoured by reading and hearing what he had done, and thus had the means of knowing not only the nature of his operations, but what was to his mind the singularly precise and accurate scientific spirit which he had brought to his work, and it was the secret of the very remarkable success he has obtained. In this matter, as in all biological questions, the secret of success lay in attention to minute details, and that was really the moral of the paper. You must, in the first place, be able to comprehend precisely—which very few people did—the exceeding complexity of natural conditions, and then you must know how to carry into practice all the precautions necessary to meet the variation in those conditions. He could not recommend anyone who was endeavouring to acquaint himself with natural history to take up a more useful and valuable study than that of the manner in

which Sir James Maitland had carried out his operations with regard to fish culture. He dwelt upon this point the more because, since the time—some forty years ago—when M. Coste first popularized the notion of fish culture, the idea became prevalent that you only had to carry out artificial impregnation, or the collection of spat in the case of Oysters, and the thing was done. He need not say what disappointment those who first experimented in the matter of Oyster culture were destined to undergo; that was a matter recorded not only in the minds but the pockets of a large number of persons. The same considerations applied to all forms of fish culture, and unless those who undertook it were prepared to work at it with that happy combination of science and practice which was exemplified in the case of Sir James Maitland, disappointment would await their efforts, as it had those of many persons who had attempted the same process. For himself, he did not take very rosy views of the value of protection pure and simple for sea fisheries, but perhaps he was all the more inclined to attach especial value to thoroughly well considered and scientific fish culture. He was inclined to think that it was in this direction we must look, and not to measures of inefficient protection, for the ultimate preservation of our fisheries. This was not the time to discuss the point, but he gathered from Mr. Wilmot's remarks that there was some extremely wicked person who had been saying that protection was of no use in Salmon fisheries; that people should be allowed to destroy anything and everything they liked; but anybody who heard the remarks he had ventured to offer at the first Conference would be aware that he, at any rate, was not one of those wicked persons. No one had insisted more strenuously than he had done on the absolute necessity for the most careful protection for those sea fisheries in which protection could be shown to be efficient, and if any one were prepared to show that measures of protection as efficient as those which were adopted in the Salmon fisheries, and which must be enforced unless the Salmon fishes were to be destroyed, would be equally efficient in the case of any of the sea fisheries, by all means let them be adopted, and no one would be a stronger advocate for protection than he should be; but, until it was made clear that the regulations were efficient, that you were really doing something for the fishery, and not

burdening the fishermen with useless and vexatious regulations, it would be better to leave the question of protecting sea fisheries alone.

Professor G. BROWN GOODE (U.S. Commissioner) said he should be pleased to give a few figures illustrating what fish culture could do. Professor Baird (U.S. Commissioner) informed him that the Sacramento River, California, was, owing to the large number of canneries there, to a large extent depleted of its Salmon; but by the establishment of a hatchery there he had turned out something like sixty-seven millions of eggs or young fry of the Californian Salmon in the past eight or nine years, one-fourth of which were put into the Sacramento River, and it was now much more productive than ever before. On the Clacainass, in Oregon, a similar experiment was tried some years ago with a like result. These experiments had clearly shown that the Salmon industry of the Pacific Coast, which was now producing fish to the value of something like three million dollars a day, was thoroughly under the control of fish culture. He might also take the case of the Connecticut, in the last century, which was one of the most productive rivers; but by the construction of a great dam, 60 miles above its mouth, the Salmon were cut off from the spawning ground, and for very nearly ninety years not a Salmon was seen. In 1866, or thereabouts, the Commissioners of Connecticut began to plant Salmon in this river, and four years afterwards they began to appear. In the first year 500 fine Salmon, of 15 lbs. to 20 lbs. each, were taken; in the following year almost an equal number. Since that the Commissioners of the States have discontinued Salmon culture in that river, the supply has again fallen off, and the river might now be considered practically deprived of its Salmon again. He simply wished to add a word in confirmation of what Sir James Maitland had said concerning American Bass. Although he did not like to say anything against a fish which was a countryman of his own, he thought it was a fish which interested only the private individuals who were able and willing to feed him, and were willing to pay any sum for the gratification they found in angling. So far as fish with which public fish culturists should deal, the Black Bass had no claims whatever, unless they put him into the same stream with Pike, and let them fight it out together.

(TO BE CONTINUED.)

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WILLIAM COUPER, Editor.

THE SOLITARY WASPS.

The Editor wishes to correspond with students of the ODYNERITES of Canada.

OUR MAGAZINE.

It is gratifying to state that this magazine is being appreciated by our Canadian readers, and furthermore encouraging to notice that, during the last year, it has been in demand by American writers on Natural History. Some of our readers doubtless anticipated that the serial would be more devoted to sporting matters, but we have discovered that it was impossible to devote much of our monthly space to this kind of news, as the daily papers generally contain reports on almost all occurrences of this nature. Occasionally some interesting original incidents are sent to us, which we publish because such matters are not within the ken of a newspaper reporter. Henceforth our pages are to be taken up by original subjects, relative to the Natural History of the Dominion of Canada, together with contributions on biological research. Our columns will, however, be open to those who love the use of the Rod and Gun.—C.

INSECTIVOROUS GROUSE.

A male specimen of the Ruffed Grouse, (*Bonasa umbellus*), sent to me from Lennoxville, P.Q., had its crop full of caterpillars of *Notodonta concinna*, commonly known as the Red-humped apple tree caterpillar. The bird contained about fifty full-grown caterpillars of this destructive moth. On opening the crop, I could not detect the strong acid smell that these caterpillars possess when living. Perhaps the bird (the body of which I ate with a relish), may have been provided with a counteracting fluid. This is the first instance coming to my notice, of our native grouse

feeding on caterpillars. *Notodonta concinna* are very general feeders; they occur in clusters on the leaves of the apple, plum, pear, cherry, rose and thorn.—C.

THE INSECTS OF CANADA.

I have received a "Label List" and a "Check List" of the insects of Canada, compiled by W. Brodie, L.D.S. and J. E. White, M.B., for the Natural History Society of Toronto. The label list contain the names of all insects known to occur in Canada, up to July of this year. The matter is carefully read and neatly printed, but I think that there should be some regard for system, as any Entomologist may notice that all the Diurnes and a portion of Walker's species of Diptera have capital letters, while species under the other Orders begin with lower case letters. The whole of the list should be uniform like the Hymenoptera, but the names of persons and places ought, in my opinion, to be capitalized. These lists are very useful to the entomologist. Copies are sold by the Society at one dollar each.—C.

ORNITHOLOGIST'S CONVENTION.

Since the publication of the works of Wilson, Audubon and Bonaparte, no large popular work on the birds of America has been brought before the public, yet the subject has by no means been dormant. Both professional men and amateurs have been steadily at work, and have not only added new species to the list, but have brought to light so many new facts relating to the history of the birds already described, as to necessitate their being classed in different groups from those in which they had at first been placed. These changes have become of late years so numerous, and having been published by different authorities, that it became a necessity to have the whole of the nomenclature and classification revised, and, if possible, placed on a permanent basis. For this purpose the ornithological depart-

ment of the Smithsonian Institution, at Washington, invited a few of the leading ornithologists of America to meet them in convention at the Museum of Natural History in the Central Park, in the city of New York, on September 26. The meeting was a very pleasant one, as it brought together those of similar tastes, who had for many years known each other by correspondence, and yet had never met. Mr. McIlwraith, of Hamilton, and Mr. Chamberlain, of St. John, N.B., represented the Dominion, and were heartily welcomed by their American cousins. The convention continued in session for three days, the principal business being the formation of an American Ornithologist's Union, with a constitution and by-laws similar to the British Association of the same name. Professor J. A. Allen, of Cambridge, Mass., was elected president; Dr. Elliot Coues, of Washington, first vice-president, and Mr. Robert Ridgway, second vice-president, for the ensuing year. Committees were also formed to report on the migration of birds, on the desirability or otherwise of encouraging the English sparrow, and specially on the nomenclature and classification of American birds. In view of the importance of the work and the enjoyment it had afforded to those who took part in it, it was resolved to have those who had attended this first meeting photographed in a group as the founders of the A.O.U., after which the members reluctantly separated, to meet again in about a year, at such time and place as may be decided on by the council of the union.

THE SHAWINIGAN CLUB GROUNDS.

MY DEAR SIR,—I have read with much pleasure and interest the correspondence of a member of the Shawinigan Club, in the *Star* of the 13th inst., and will coincide with him, that the scenery of the Laurentides are unsurpassed, both in lakes, rivers and forests, abounding with game and fish of all qualities. From what I hear, most of our lakes within thirty or forty miles of Berthier, Rivière du Loup and Three Rivers, are all taken up by sportsmen, who intend keeping guardians over their grounds, and, more than that, stock some of their lakes with the famous land-locked Salmon or *Wawanish*. I see that our American friends and neighbors, who are generally good anglers, have taken up a large share and the balance is secured by Canadians, who are also good in the use of both rod and

gun. The Shawinigan Club deserves praise from every one who love to stimulate outdoor sport, for their exertions so far, in making their place so attractive. They have made wide portages on their grounds, leading to several beautiful large lakes; even ladies can walk over these with ease. I know of several of the fair sex who have patronized the club, and were plucky enough to go through steep portages, and several miles of canoeing without finding the least inconvenience; they have given the *entrain*, and made the club so much more sociable. Their club-house, out-buildings, ice-house and stable are built as log houses, very substantial and durable; occupying about twenty arpents of cleared land fronting on lake Wapizagonke; this year they have already harvested several bushels of grain and vegetables. The club canoes have been well chosen, light and heavy, suitable for portaging and lake use; the Peterboro' coming ahead for swiftness; the bark for lightness, and skiffs, also for the lake; besides sail boats which can be trusted in heavy weather. I wonder how the canvas canoe would suit; they are now made fifteen feet long, weighing seventy pounds and can carry 800 pounds, and, when folded up, can be carried on one man's head, his hands being at liberty; he can then carry a good deal more with ease. This would help considerably to a party of two, who would like to go straight along. The Peterboro' canoe, and even the bark canoe, after some wear, require two men to carry each of them, and they have often to return to the landing place, to load again what they could not carry at first while portaging; experience will tell. I also understand, the club intends to purchase tents of different sizes, and camping kits with all attachments for camping away from the club house. Guides can always be obtained by writing to St. Elie or Hunterstown, a couple of days ahead. I may mention here, having heard it stated by Mr. Baker, who resides at St. Elie, that the new government road has been cut out from his place to a point called Dufresne, thereby shortening the transit at least six miles to the members who will pass by St. Elie. I have just heard of the very pleasant time that one of the members had lately, under canvas, it being his first visit to the club's sporting grounds. The trip was made from Three Rivers, where one can obtain a double seat and buckboard, with a strong horse to keep pace at the rate of six miles an hour, even through a sandy road,

for twenty-one miles, reaching the neat little village of Shawinigan, a strictly temperate locality, there being only one boarding house, quite neat and clean, and where the traveller can sit to a very good substantial meal. After an hour's delay the driver is again at the door, having then eighteen miles more to travel, through a very pretty forest, where one can kill partridges from his seat; this party, having bagged six for his share. Then the driver points out Dufresne; it is the name of a well-to-do farmer, who is most obliging, and where the old ones open the flask to salute him and his wife. His home is situated on a high coteau looking towards a large lake. Then ten more miles to the club house, passing through large open land very good for culture. Then the six miles portage, made at the expense of the club, a splendid wide road through the thickest forest, where partridges are occasionally seen, having again bagged several, and, at last, the club house is seen through the trees at a distance. On reaching the door, the men immediately hoist the flag, and a general salutation of contentment issued; a substantial meal was served, and, among other things, partridges which had been killed with stones the day before. During the evening the tents, camp kettles or cuisine, blankets, drinkables and eatables, the last articles being composed of boneless pork, flour, rice, pea and other substances, all prepared, with cheese, biscuit, and marmalade, carrying also a baker and a portable stove for the tent. This last item being a most comfortable piece of furniture in October; all were packed up and divided as evenly as possible, to be carried easily over the several portages to be made. We left the club for Matarvine river, going through lake Wapizagonke, paddling seven miles in one hour and forty minutes, against the wind, and through a creek into lake and isles, a couple of miles long; then, a portage of several arpents, where partridges were killed right and left; remarking also the imprints of bears, it was decided on the spot to send two bear traps to be placed on this portage when we returned; then another portage of several arpents into another lake; then the grand portage of two miles to lake Antiagamack, remarkable for its forests, huge rocks and its natural echo. This lake is famous for its pike, dore and ducks, but at this time of the year, when the water is still low, the fishing is not so good, but much better for ducks, which were plentiful, the

Black Ducks specially being in quantities, and of very large size; then, on through the Serpentine river, ten feet wide and two miles long, leading to the Matarvine river; partridges were shot on each side from the boat as we went along. The Matarvine, at its entrance, is about three arpents wide; land on each side being level and good; hard wood growing out freely; it is astonishing to see no settlers here, the land being so much better than in the vicinity of Shawinigan and St. Mathien, and not very far from the Piles Railway. The Matarvine at this point runs five or six miles long to the Castor Noir, very picturesque for its islands and sand banks, the water very smooth and clear; trolling is much enjoyed all along. Some places dore are caught abundantly; then, the pike are of eighteen and twenty pounds weight. Still-fishing at the Castor Noir is quite a curiosity, catching dore just as quick as one pleases, and of large size. Several little lakes can be found a few acres on the north side of the river, full of trout; some of these contain pike. The tent was pitched on the north side of the river, on an elevation and quite close to another tent occupied by an indian and his wife, who were there several days. The indian was away shooting; the wife was quietly knitting, her dog beside her; she spoke French fluently and was glad to see us. In front of their tent could be seen some fish being smoked and quite a lot of partridges, well preserved. The indian was quite a novelty and a good companion. During the evening he was questioned on his fishing, shooting and trapping expedition. He had travelled very far north, near Montichire and the Manavoine; had shot many caribou and moose; trapped many beaver and otter, and had fired at a bear quite recently, face-to-face, at ten feet distant. He told also of seeing the day before, five caribou together within an arpent, and was preparing to shoot, when his partridge dog started after them, running half an hour before coming back. He stated that caribou were plentiful, their footprints were seen everywhere, near the lakes and ponds, and sometimes in the portages. Though this trip had been got up to shoot large game, not one was seen, but as a consolation, many traces quite fresh were found everywhere. The party left, enchanted with the scenery, promising to return again. The weather was not very clear, being windy at times, still the air was bracing and cool helping to keep one's spirits in good condition.

The party returned to the club house with twenty odd brace of partridge, having seen the traces of caribou, bear, beaver, otter, marten and muskrat, this last one in abundance; and being perfectly satisfied that they could be shot and trapped, with time and perseverance. Fish were also in abundance; red trout, from one pound to six; dore of two to five pounds and pike from ten to twenty-five pounds, could be seen. Trout pilling into a narrow by thousands; they could easily have been killed with an oar, only for the close season. The party arrived home in good time, all the better for the trip, and desirous of returning again at the first good opportunity. If one could only be given the chance of killing a caribou or a moose, Mr. Editor, how the poor fellows would be feasted, and many of our friends would come in for a part of the spoil; in the mean time, I remain,

A LOVER OF OUT-DOOR SPORT.

INTERNATIONAL FISHERIES EXHIBITION, LONDON, 1883.

CONFERENCE ON JUNE 21, 1883.

(Continued from page 260.)

MR. W. OLDHAM CHAMBERS, seeing Professor Brown Goode on the platform, thought perhaps he would have given the Conference the benefit of his experience with the *Salmo sebago*. A few months ago Professor Baird sent him over fifteen thousand eggs of the land-locked Salmon, in the hope that they would form an important feature in fish breeding in this country, but he said nothing or little about the *Salmo sebago*. He thought there were many rivers in England which were completely cut off from the sea, and if the land-locked Salmon could be introduced into them, or into the Broads of Norfolk, it would be very advantageous.

Professor G. BROWN GOODE remarked that his colleague Mr. Earle might be able to give more definite information concerning the land-locked Salmon than he could, but at the same time he should like to make up for his detractions of the Black Bass by saying a word or two in favour of the former fish. It was held in high esteem by his countrymen, as might be judged by the fact that the United States Commissioners had for some years carried on a hatching establishment on Grand Lake Stream and the subordinate streams on

other lakes in Maine for the propagation of the eggs of this fish. The young fry had been introduced into many smaller streams and lakes in the Northern States. The experiment had not been worked out to the utmost extent yet, but there was every reason to believe that the land-locked Salmon was going to be extremely valuable in the northern lakes, and he saw no reason why it should not be equally valuable in the lakes of Scotland. Mr. Wilmot was equally familiar with this fish, for it might be said to be more abundant in British North America than in the States. It was undoubtedly the same race as the *Salmo salar*. In some instances it had become land-locked by the erection of dams within the memory of man, in other instances it had become land-locked by natural causes before or soon after the settlement of the country, whilst in other instances, again, it was not land-locked by any artificial obstructions, but remained without any obstacle to its visiting the sea save the great distance it would have to traverse. It lived in the head-waters of some of the large rivers. The same might be said, to some extent, of the red-spotted Trout, or Char (*Salmo fontinalis*), which in the northern parts of Canada and Nova Scotia descended to the sea, where it lived during a large part of the year, and was known as the Sea Trout, and was a great favourite of anglers. It inhabited the lower stretches of rivers and streams, and frequently descended into the sea; those which did get into the sea were considered to be very fine. After passing the limit of Long Island, which was the limit of the distribution of Salmon, the same barrier of warm temperature which seemed to keep the Salmon from going up the large rivers, prevented the red-spotted Trout from descending from the mountains to the sea; and it had really become land-locked by reason of temperature barriers in the southern part of its range, though it extended into the southern spur of the Alleghanies six or eight degrees of latitude farther south than the point at which it was able to descend to the sea. The land-locked Salmon is a most delicious fish, though not quite so large as the *Salmo salar*; it was rarely more than eight or ten pounds in weight, and, on account of its long detention in fresh water and diminution in size, its eggs were considerably smaller than those of sea-running Salmon.

MR. WILMOT said there was a celebrated American showman who once came to Eng-

land and took away an animal called Jumbo. The same gentleman in former years exhibited a certain animal at his museum in New York which he advertised as the "What is it?" It seemed to him the same term might be applied to the land-locked Salmon. His impression was that there was no such thing in existence as land-locked Salmon, scientifically or naturally. It was the true *Salmo salar*, which had a different coat and a different shape from the water it lived in, in the same way that the showman he referred to put a coat on the animal he exhibited. Land-locked Salmon, which he called *Salmo salar*, was a fish which could be obtained by any pisciculturist at his pleasure; all he had to do was to hatch from the egg of the *Salmo salar* a number of little fish, put them into a large body of water from whence they could not reach the sea, and if they found food congenial to their wants, they would grow and develop into a large fish, slightly changed in colour and scarcely perceptibly in form. Such had been his experience in America and Canada. Lake Ontario was filled with this fish. When he was a youth he had known thousands killed in one night, and the farmers caught them in such numbers as they entered the streams to deposit their ova, that some of them got enough to buy their farms with. In the stream which ran within a few yards from where he was born and brought up he had killed hundreds and thousands of them on their migration up from their sea, Lake Ontario, into the smaller streams and rivers to deposit their ova, in the same way as the *Salmo salar* left the ocean and ascended rivers. For want of proper precautions, proper protection and good legislation, this Salmon had almost disappeared from Lake Ontario. At first there were no laws in the country, and consequently every man killed as he pleased, and as the poor creatures came up, they were destroyed right and left. The Indians killed them, and the white Indians killed them still more. To prove that the *Salmo sebago* was the true *Salmo salar*, he might say that he had taken eggs of *Salmo salar*, impregnated them, hatched them, and taken them up into the rivers running into Lake Huron; and to-day some of the true *Salmo salar* were found in Lake Huron, though smaller than were found along the coast. That was evidence to show that you might make land-locked Salmon in any water you chose where the fish could find congenial food, and

where they could not get to the sea. It might be said, How could the Salmon in Lake Ontario be said to be land-locked when the St. Lawrence emptied that lake into the sea? Salmon were feeders in the sea and breeders in fresh water; they migrated annually to the rivers to reproduce. When they were abundant in the waters of the gulf, they passed up the St. Lawrence, entering every stream on either side up into Lake Ontario; and were it not for the great barrier of Niagara Falls the Salmon would be found in the upper springs of Lake Superior. It was their instinct to go onward and onward until they found a suitable spot for spawning, and they would have passed into Lake Erie and Lake Superior, the same as Lake Ontario, were it not for the Falls; the consequence was they entered into the smaller streams which fed the lake and went back into Lake Ontario instead of into the sea, where they had remained up to the present time, as the true sea Salmon only acclimatized to fresh water. Any gentleman in England who was desirous of having land-locked Salmon, if he had a lake with a great depth in the middle and small streams running into it, into which the fish could go to breed, might produce land-locked Salmon from the eggs of the Salmon of the sea.

MR. BIRKBECK, M.P., on behalf of the Executive Committee, desired to thank Sir James Matland for his excellent paper, and also to thank Mr. Wilmot for his remarks on the question of State aid to Fisheries. He thought the advice he had given was most excellent, and only regretted that the House of Commons was not more largely represented. He could only hope that through the press the members of the Legislature would be able to read, mark, learn, and inwardly digest what had passed, and would persuade the Government of the day to recognise the importance of giving assistance to our fisheries.

The resolution was then put and carried unanimously.

SIR JAMES G. MATLAND, in reply, said that he was very glad that his paper had elicited remarks from the representatives of America and Canada, both of which countries were pre-eminently known for fish culture. He could not say that he agreed with all the remarks that had been made. Fishing was a very old art; fish had been caught ever since man went out in a coracle, but fish culture was still very young, and it would be expecting a great deal to expect Parliament to change legis-

lation in a moment before this art had had time to approve itself to the nation. With regard to his hybrid experiments, they were yet too young to say exactly what might come of them, but they showed peculiar forms in scaling, and perhaps might help towards connecting different species of Salmonidæ and reducing them down to one or two species, the others being merely varieties. He was much obliged to Mr. Wilmot for his remarks on land-locked Salmon; but having had some experience on lakes in Scotland where Salmon had been bred and had not gone into the sea, he had found invariably that where there were no Char in the lake the Salmon had become very large in the head, and seldom exceeded four or five pounds in weight. On the other hand, some nine years ago he got a few eggs of the Leuvi Trout from the late Mr. Buckland, and turned about one hundred and fifty into a small piece of water a little over one hundred acres, which contained nothing but small Perch. Last Friday a gentleman brought him one of these fish, which he had found washed ashore, which must have been just nine years old; it measured $33\frac{1}{4}$ inches, but was in very bad condition. The Trout when put under conditions of having shallow swimming fish beside it had obtained this enormous size, and he had no doubt it was absolutely necessary to land-locked Salmon to have shallow-swimming fish to feed upon. If they were not present in the water, they should be introduced first, and the *Salmo sebago* afterwards; this would make the experiment more successful. He concluded by proposing a vote of thanks to the Chairman, who had taken a great interest in the operations of the Fish Culture Association, of which he was President.

The Marquis of HAMILTON had much pleasure in seconding the vote of thanks to the Chairman. He could not but think that the speeches which had been delivered that morning would have the most practical effect on all those interested in fisheries. He hoped the observations made by Mr. Wilmot with reference to State aid being given to the fisheries of this country, would be earnestly taken up by the public at large, and that before many months had elapsed they would take a practical form, and be brought forcibly under the notice of Government.

The vote of thanks having been passed unanimously.

The CHAIRMAN assured Congress it had given him the greatest pleasure to be of any use by occupying the chair. He had seldom presided

at so interesting a meeting, or gained so much knowledge in so short a time. He must say he did not believe in land-locked Salmon as a distinct species. He believed you could produce a land-locked Salmon from the ordinary fish. He recollected when his uncle, the late Lord Spencer, had the shooting of Glenloch, near Kilin, he collected a quantity of par and put them into a small tarn high up on the hills, where they remained for several years. When they went to fish this lake they saw a number of silvery-looking fish of about 2 to 3 lbs. in weight, jumping just like Trout would do. He believed those fish were the par which were put in seven years before, which had turned silver, like Salmon. It was hoped they would continue to increase, but they became thinner, and gradually dwindled away. Before sitting down he must say a word in defence of the poor Black Bass, which had been so hardly used. He fully agreed with the remark that they should not be put into Trout streams, where they would be as destructive as Pike, but in many parts of England, particularly in his own country, there were neither Salmon nor Trout in the streams, only Pike, Perch, and the most abominable of all fish, coarse Bream. In those waters the Black Bass would be a useful addition, he would rise to a fly; he would take any bait; he would live with the Pike, and he was exceedingly good eating. They contained very few bones, and he thought the flesh was decidedly more like fresh Whiting than any other fish.*

NOTES ON THE NATURAL HISTORY OF LABRADOR.*

BY W. A. STEARNS.

There has been much contention between the two great powers, France and England, as to who first discovered this great peninsula of Labrador. It was certainly visited by Sebastian Cabot in 1496; and more or less explored by the Portuguese Cortereal, who, it is supposed, named it.

The popular tradition of the coast seems to be "that one Labrador, a Basque whaler, from the kingdom of Navarre, in Spain, did penetrate through the Straits of Belle Isle as far as Labrador Bay, some time about the middle of the fifteenth century, and eventually the whole coast took its name from that coast and harbor."

*From Proceedings of the U.S. National Museum, vol. vi., No. 8.

There is very little doubt but that the coast here was visited by Norsemen as early as the tenth century.

There exists strong proof, also, that the discovery of this coast was made known by Basque fishermen.

As early as 1509, a chart of the coast had been published and was in the possession of the French.

In 1532, Jacques Cartier visited the coast with *Basque fishermen for pilots*,

The first established colony in Labrador appears to be that at "Brest," now Bradore, which was founded 1508, and soon contained 200 houses and 1,000 inhabitants, which number was trebled in the summer time or fishing season; but this colony did not survive over a century or a century and a half.

At present, from Red Bay to Natashquan, a distance of over 400 miles, there is scarcely a township containing more than thirty resident families.

The principal seal-fishing establishments are at La Tabatier, Dog Island, Bradore, Long Point, and L'anse Loup. At these the average catch of eight stations, where hand nets are used, that are about 40 to 75 fathoms long and 30 feet deep is 800 large and 50 to 100 small harp and hood seal. The catch of Newfoundland and other steamers and vessels is 13,000 to 16,000 young "white coats" on the ice in the spring. These figures are increased or diminished according to the season.

I have visited nearly every station of importance from Mingan to Triangle Harbor, some miles north of Belle Isle, and every where found the people hard at work at their fishery in the summer time.

Blanc Sablon forms the dividing line between the Province of Quebec on the left hand and southwest and Labrador on the northeast.

All along the coast there are little harbors and bays some of small and some large size. All these places that can harbor a vessel contain from one to three and eight—the usual number—of houses. They are various distances apart, say from half a mile to 8 miles, though generally from 3 to 5 miles. It is thus, save in one or two rough places, easy to go along the coast in small boats, stopping here or there in rough weather or at night.

In 1875 I made a summer excursion to Labrador, and remained there about two months chiefly within a radius of 50 miles southwest, and 10 northwest of Bonne Espérance.

In 1880 I visited the coast in September, and remained there the fall, winter, and spring of 1880-'81, returning home after an absence of just one year on the coast. During that time I visited nearly all the important points from Mingan to Red Bay.

In 1882 I spent the summer on the coast again, starting from Boston, as I had done in 1875 (my 1880-'81 trip had been from Quebec), with a party of about twelve young college men, when much good work was done in collecting, but owing to insufficient apparatus only enough to show what might be done with a properly fitted-out craft going for this express purpose and no other.

The following list of mammals, birds, and plants will show what has been accomplished in that line, and it is hoped that they will add, if ever so little, to our knowledge of the Labrador fauna and flora. Much more remains to be done, however, in each of these departments.

My examinations have been chiefly along the sea-coast. The interior has been rarely, if ever, to any great extent invaded by men.

MAMMALS.

During the three trips that I have made to Labrador I have found the following mammals more or less abundant (according to their designation) all along the coast:

LYNX CANADENSIS (Desm.), Raf. *Canada Lynx*.—Common, especially in winter, when it is hunted for its fur all along the coast.

CANIS LUPUS, Linné, var. *GRISEO-ALBUS*. *Gray Wolf*.—Reported as seen occasionally, but very rare.

VULPES FULVUS (Desm.), var *FULVUS*. *Red Fox*.—Abundant, especially in furring season.

VULPES FULVUS (Desm.), var. *ARGENTATUS*. *Silver Fox*; *Black Fox*.—The former variation is not uncommon; the latter is rare along the coast. I saw three beautiful skins of the black variation, with scarcely a light hair in them, caught on the coast.

VULPES LAGOPUS, (Linné) Gray. *Arctic Fox*.—Rather common, but getting more and more scarce in Northern Labrador.

MUSTELA PENNANTI, Erxleben. *Fisher*.—Found occasionally in the southern portion of Labrador.

MUSTELA AMERICANA, Turton. *American Sable*; *Marten*.—Abundant inland, in the furring season, throughout the peninsula.

PUTORIUS ERMINEA, (Linné) Griff. *Ermine*;

Stoat.—Common all along the coast and probably equally so inland.

PUTORIUS VULGARIS, (Erxl.) Griff. *Common small Weasel*.—As far as I can discover equally abundant with *P. erminea*.

PUTORIUS VISON, (Schreb.) Gapp. *Mink*.—Abundant everywhere along the coast and about inland ponds.

GULO LUSCUS, (Linné) Sabine. *Wolverine*.—Rather common, but not nearly so often taken as one would imagine by the trappers. Seems to be pretty generally distributed along the coast.

MEPHITIS MEPHITICA, (Shaw) Baird. *Skunk*.—Seen occasionally in the lower portions of Labrador, but is rare.

LUTRA CANADENSIS, Sabine. *Otter*.—Common in the furring season all along the coast.

URSUS AMERICANUS, Pallas. *Black Bear*.—Common inland and along the high bluffs by the sea shore, all along the coast.

THALARCTOS MARITIMUS, (Linné) Gray. *White or Polar Bear*.—Rare, occasionally seen on blocks of floating ice off shore in the extreme northern portions. Twice recorded as far down through the straits of Belle Isle as Blanc Sablon.

PROCYON LOTOR, (Linné) Storr. *Raccoon*.—“Occurs at Square Island.”—Packard.

PHOCA VITULINA, Linné. *Harbor Seal*.—Common. Rears its young on sand-bars about 15 to 20 miles up the rivers in the interior in the spring. Abundant outside in the fall.

PHOCA FETIDA, Fabricius. *Ringed Seal*.—Not uncommon in harbors in spring and fall. Distinguished from last species only on close examination.

PHOCA GREENLANDICA, Fabricius. *Harp? Seal*.—Common in *migrations* all along the shores south of Belle Isle.

ERIGNATHUS BARBATUS, (Fabricius) Gill. *Square-Flipper Seal*.—Rather common on cakes of floating ice in the spring, all along the coast.

CYSTOPHORA CRISTATA, (Erxl.) Nilsson. *Hooded Seal*.—With *P. Greenlandica*, but less common.

ODOBÆNUS OBESUS, (Illiger) Allen. *Walrus*.—Rare along the coast of Northern Labrador. Two were shot in 1880 and 1881, at Fox Harbor, St. Lewis Sound, off the shore a little way. A gentleman of our party obtained the tusks of one of them, which were about 7 inches long and nearly an inch in diameter.

Regarding the deer of Labrador some con-

fusion exists. Two species, about equally common, are found throughout the peninsula in small, or less frequently in large (300 or 400), herds. They are probably the following:

TARANDUS RANGIFER, Brookes, var. *CARIBOU*. *Woodland Caribou*; and

TARANDUS RANGIFER, Brookes, var. *GREENLANDICUS*. *Barren Ground Caribou*.

ALCES MALCHIS, (Linné) Gray, the *Moose*, and *CERVUS CANADENSIS*, Erxleben, the *American Elk*, have both been reported as found on the southwestern portion of Labrador, about north from Anticosti, but they were doubtless very rare and occasional.

OVIBOS MOSCHATUS, Blainville. *Musk Ox*.—

On the authority of Prof. A. S. Packard a single relic of this animal may be accredited to this region. Probably it was its most southern limit in former times.

DELPHINAPTERUS CATODON, (Linné) Gill. *White Whale*.—Common in the Saint Lawrence River, at least as far as Anticosti.

MONODON MONOCEROS, Linné. *Narwhal*.—Given on the authority of Professor Packard, but it is probably exceedingly rare.

ORCA GLADIATOR, (Bonnaterre) Gray. *Killer*.—Occasional all along the coast apparently.

GLOBICEPHALUS INTERMEDIUS, (Harlan) Gray. *Black-fish*.—Common in the Gulf, at least to the mouth of the Straits of Belle Isle.

GRAMPUS GRISEUS, (Cuvier) Gray. *Grampus*.—Not uncommon all along the shores to Belle Isle, and perhaps further.

PHYSETER MACROCEPHALUS, Linné. *Sperm Whale*.—Occasionally taken along the coast, as I am informed by the traders and people.

SIBBALDIUS BOREALIS, (Fischer) Geoffroy. *Sulphur-bottom Whale*.—Not regarded as rare. Frequently taken by the people along the shore. One towed ashore at Old Fort Island in 1878 or 1879.

One of the whalebone whales is occasionally taken along this coast, but which species it is I cannot tell. I am sure that several species both of whales and porpoises will be eventually added to this list.

SCIUROPTERUS VOLUCELLA, (Pallas) Geoffroy, var. *HUDSONIUS*. *Flying Squirrel*.—Occasional along the coast. Specimens found at Saint Augustine.

SCIURUS HUDSONIUS, Pallas. *Red Squirrel*.—Common in the woods along the shore, and probably inland also, all along the coast.

Gray squirrels are said to occur here also, but I did not see any.

(TO BE CONTINUED.)

THE CANADIAN SPORTSMAN AND NATURALIST.

No. 10.

MONTREAL, OCTOBER, 1883.

VOL. III.

WILLIAM COUPER, Editor.

TO SUBSCRIBERS.

We are anxious to have subscriptions to this magazine sent in before the end of this year. Our patrons in arrear would do us a favour by remitting on receipt of this number. It should be cash in advance.

CATALOGUE OF CANADIAN PLANTS.

A Catalogue of Canadian Plants was wanted by our Botanical students. The Geological and Natural History Survey of Canada have recently issued the first part consisting of POLYPETALÆ. The work is evidently authentic, and will be highly appreciated by Canadian Botanists. In fact the name of John Macoun is sufficient to make it reliable, and we trust that he may have health and strength to finish this good undertaking. It would be profitable to the people, and doubtless a pleasure to the Director of the Survey to see other documents emanating from it, as well examined and arranged as this work before us. The Government should give the intelligent portion of the inhabitants of Canada a chance of seeing the literature issued by each section of this Department. This is the first document from the Geological Survey, which has reached us since this magazine was issued, nearly three years ago, and we have to thank the author alone for it. The printing is by Dawson Brothers of this city, and it is done in a creditable manner.—C.

INJURIOUS AND OTHER INSECTS.

We have received the "First Report on the Injurious and other Insects of the State of New York," by J. A. Lintner, State Entomologist. The book is an octavo of 344 pages with general index. This Report is of great value to agriculturists and horticulturists, and the entomologist will find quite a study of new

material. It contains a list of the Apple-tree insects of the United States, which number one hundred and seventy-six species. Mr. Lintner purposes, as soon as practicable to present a report on Apple-tree insects, which shall contain notices of all the known North American species with figures illustrating them as far as possible, together with the most effective methods for preventing their injuries. This First Report of Mr. Lintner's is well illustrated—it contains good figures of the Vine Phylloxera; the Wheat midge in all its stages; the Cotton Moth; the Carpet-beetle; the Bag or Basket-worm (*Thyridopteryx ephemereformis*, Haworth;) The Larch Lappet (*Tolyte laricis*, Fitch.) The Bronze-colored Cutworm (*Nephelodes violans*, Guenee.) The Stalk-borer (*Gortyna metela*, Guen.) The Corn-worm (*Heliothis armiger*, Hubner. The Vagabond Crambus (*Crambus vulgivagellus*, Clemens.) The Dried Crambus (*Crambus exsiccatius*, Zeller.) The Apple-leaf Bucculatrix and its parasites. The Apple-tree case-bearer (*Coleophora malivarella*, Riley. There are quite interesting chapters on injurious Dipterous, Coleopterous and Hemipterous insects. A figure is given of the punctured clover-leaf Weevil (*Phytonomus punctatus*, Fabr., the larva of which form a singular network cocoon, attached to the underside of leaves. Mr. Riley is now satisfied that Curculionidæ have been found to spin "yellow-brown threads, loosely interwoven, so that the fabric resembles net-work." The Appendix is occupied by the titles of Dr. Fitch's Reports, and descriptions and notes of new species of Lepidoptera, all of which is extremely interesting.—C.

"THE ACADIAN SCIENTIST."

It gives us pleasure to notice that the "*Acadian Scientist*" is now issued as a

twelve page magazine. Success to Canadian literature, say we. *The Canadian Sportsman and Naturalist* has had to work its way without Government pap; the "Scientist" may have had hard work to place itself in its present position, but such success may be attributed to positive friendship towards a good cause. Poor Provancher, the Editor of "*Le Naturaliste Canadien*" who received Government aid for fourteen years past, now says:—"Mort ressuscité, et remort, comme aurait dit un célèbre maire d'une commune de France, nous ne reparaissons aujourd'hui devant nos lecteurs, que pour leur adresser nos adieux." Poor old man, he deserved a better fate. Canadian Natural History it appears is not appreciated as it should be by the Government of Quebec.—C.

AMERICAN ORNITHOLOGISTS' UNION.

The following Canadians are members of the American Ornithologists' Union lately formed in New York:—Regular members: Mr. Montague Chamberlain, of St. John, N.B.; Mr. W. E. Saunders, of London, Ont., and Mr. McIlwraith, of Hamilton, Ont., who are also among the "founders" of the Union; Associate members:—Mr. Brodie, Toronto; Mr. Boardman, New Brunswick; Mr. William Couper, Editor of *The Canadian Sportsman and Naturalist*, Montreal; Dr. Gilpin, Halifax; Prof. Macoun, Ottawa; Mr. J. M. Lemoine, Quebec; Mr. Morden, Hyde Park, Ont., and Mr. W. L. Scott, Ottawa. The associate members have all the privileges of regular members except that of voting.

A GOOD SUGGESTION.

MR. EDITOR—Taking a great interest in the columns of the *Canadian Sportsman and Naturalist*, I thought it would not be out of place to make a few brief notes on the study of Natural History for the young. I notice that the majority of the institutions in Canada which embrace this delightful science are composed mainly of adults who are interested in discussing problems too deep for the young mind; and I also notice that our American Consins are ahead of us in this respect. Why should it be thus? Have we not an Association in the Dominion that would be willing to

devote a little of its time and means to instil in our boys and girls a love for Natural History, and shall we allow our friends over the line to do it alone? Until very recently the American people were on a par with us, but a gentleman in Lenox, Mass., came forward and proposed to organize an American Agassiz Association (called after Prof. Louis Agassiz, who was for years professor in Harvard College) in connection with the St. Nicholas monthly Magazine, to be devoted to boys and girls, which was accordingly done, and from the latest report I learn that it has 525 branches, and 5970 members; and it is really astonishing the interesting observations that are made by even the youngest of its members. I might mention that branches have been formed in Montreal, Toronto, Ont., and Sydney, C.B., all of which are in a flourishing condition, but without the assistance of older organizations they cannot expect to fulfil their mission. Those advanced in years know that they must be parted from their work very soon and perhaps leave it unfinished: the question here arises, who will finish it? I can easily answer no person if the young of to-day are not trained to do it. I wish not only to call the attention of scientists to this very important subject as I think all should be interested alike, fathers, mothers, teachers and even the Council of Education, because I think it is a matter of the greatest importance to the Dominion. Hoping Mr. Editor that the preceding notes may be read by the right authorities and that a reform may take place among some of our most influential institutions, and that they may organize clubs all over the country for the benefit of our young scientists and others that would study this branch, only for the difficulties it exhibits, is the most sincere wish of one of the oldest patrons to your journal, which cannot be praised too highly for the manner in which it presents to the people of Canada and the United States original observations and research on the Natural History of the country, so that even the youngest of its readers may read and understand.

Yours, &c.,

NATURALIST.

Montreal, Oct. 1883.

AN ICTHYOLOGICAL QUESTION.

Can the salmon (*Salmo salar*) live and propagate in bodies of fresh water which have no communication with the sea?

This question is now agitating the minds of

many of our fish culturists, fishermen and naturalists, and in view of the efforts which are being made to increase the supply of food derivable from our numerous and extensive lakes, rivers and creeks, is one the determination of which as early as possible is very desirable, as it may have the effect either of encouraging the artificial stocking of many of our waters with this very prolific and delicate fish, or of preventing a useless expenditure of time and money in attempting that which the laws of nature and of instinct prohibit. In this connection a glance at the natural history of the salmon and its congeners may assist those of our readers who are but slightly acquainted with the subject to form a rational *prima facie* opinion upon the same.

The natural habitat of the salmon is unquestionably the sea. In the salt water it thrives and increases in bulk and weight with astonishing rapidity; but it is not a deep water fish, never venturing far from the coast, along which it ranges in search of its food, which consists of shrimps, prawns, and other small crustaceans, sandlaunces, and the fry of herrings and other sea fish which come in shore to breed. When spawning time arrives, the instinct of propagation prompts them to leave the salt water, and resort to the fresh water of the rivers and creeks to deposit their ova. But they do not quit the salt water for the fresh all at once; they have to undergo a process of seasoning or "acclimatizing" before making the tradition, for which purpose they will, for several days, or sometimes weeks, frequent the mouths or estuaries of their favourite streams, ranging up and down with the tide and keeping in the brackish water until fully prepared for the change of medium. As soon as their preparation is complete they take advantage of the first rise of the fall floods, which assures them of a sufficiency of water for their journey, and vigorously pursue their way to their accustomed spawning-beds in the upper parts of the streams; for it is a well-established fact that salmon habitually returns to the stream in which it began its own existence. In these arduous journeys it is no trifling obstacle which will interrupt, or even delay their progress, in which they display a degree of perseverance truly remarkable, stemming the swiftest currents and the most violent rapids; and even overleaping falls of six to eight feet in height. On one occasion the writer saw a fish, apparently about ten pounds in weight, make ten successive attempts to surmount the

cauld, *i. e.* the mill-dam, at New Mills, on the Whitadder, a small river which joins the Tweed about two miles above the town of Berwick, and succeed on the eleventh trial. On arriving above the influence of the tides the great "school" disperses, some of the fish remaining on the lower gravels, while others persistently pursue their way to the very head waters of their favorite streams.

Having deposited their ova, they begin to fall back towards the sea; but not with the same energy and rapidity with which they made their ascent, taking several weeks to complete their passage. Indeed, many of them remain over the winter in the deeper parts of the rivers, waiting for the spring freshets to carry them down with little exertion of their own. In the fresh water they rapidly deteriorate in health and condition, and become lean, lank and ill-shaped. The silvery brightness of their scales becomes tarnished and dull, and patches of dull red color appear on their shoulders and sides, while the rich, red, firm flesh assumes a dingy yellow color and a flaccid texture, and is unwholesome and in many cases dangerous. Once restored to the salt water, they soon regain their health and condition, and in the course of six or seven months are ready again to revisit the spawning grounds, having in the mean time gained an additional weight of from 30 to 50 per cent., or even more.

The ova, which are mostly deposited in the months of October and November, remain in the gravel till the following spring, when they hatch out into the small fish known in the English and Scottish rivers as the Par or fingerling. This fish is easily distinguished by its elegant shape, its deeply forked tail-fin, and by the dark bars or "finger-marks" and the bright red spots which ornament its sides. It remains in the fresh water of its native streams for about a year, in which time it attains a length of three to five inches, and a weight of from two to four ounces. In the months of March and April a change comes over its appearance; it assumes a coat of shining silvery scales which completely conceal the bars and spots, though if the outer covering is removed the original markings will be revealed. Contemporaneously with this change in their appearance they seem to be seized with an irresistible desire to visit the salt water, and the "smolts" which were scattered as par through the whole extent of the river and its tributaries, assemble in large shoals and, as if actuated by a common im-

pulse, set out on their journey, often of a hundred miles or more, to the sea. A series of experiments carried on in the Tweed and its tributary the Whittader in the years 1841-5 in which the writer assisted, seem to indicate that the young salmon remain in the salt water until the following year, when they appear again in the rivers in the form of "grilse" with a weight of from 3 lbs. to 9 or 10 lbs. each, and in the next season they return as salmon—which makes this fish require three years to attain its maturity. The instinct which impels the smolts to seek the sea is not less powerful than that which prompts the parent fish to reach the upper waters of the rivers, and they show an equal energy in attempting to overcome every obstacle that opposes their progress. Mr. Shaw, of Stormontfield in Scotland, who was the first to identify the par as the young of the salmon, relates that in one of his experiments, he enclosed several par in a pond formed by excavating the bed of a small creek, the outlet of which was closed by a grating that formed a bar to their downward migration. When the time arrived for their migration, and they assumed the silvery livery of their species, so strong was their migratory impulse that they threw themselves in frantic leaps out of the water, and most of them perished on the dry ground on which they fell.

In view of these ascertained facts, that the salmon proper (*Salmo salar*) thrives only in the sea and becomes languid, lean and unhealthy when it remains long in fresh water, and that the fry or smolts at a certain stage of their growth are seized with an over-mastering impulse to seek the salt water, it would seem to be more in accordance with the order of nature, and therefore, more likely to be successful, to place the artificially hatched fry of the salmon (*S. salar*) in those streams only which afford access to the sea, and to stock the fresh water lakes and ponds which are wholly or partially cut off from the tide-water of the ocean with the fry of such species as have their natural habitat in fresh water, such as the great Makinaw trout (*Salmo namaycush*) the Siskawitz, (*S. Nisicowet*, or Lake Superior trout) and the Brook trout (*S. fontinalis*) in some of its numerous varieties.

It may be objected that our arguments are drawn from the habits of the British salmon and therefore will not apply to the American fish; but it is allowed by the naturalists and fishermen of both countries that the fish of

both localities are identical, and it is therefore fair to infer that their habits are similar, and that the argument drawn from the one will apply with equal truth to the other.

It is true that the artificially hatched fry which have been introduced into the upper lakes have lived and grown, and have even begun to propagate; but the diminution in size both of the fish and their ova, their slow growth, requiring a period of four years to attain a weight of eight pounds, while the salmon of the sea reaches about three times that weight in the same time, and the different color and flavor of the flesh give evidence of impaired vitality. Of those which have been placed in smaller bodies of fresh water, the report in most cases is that they have "disappeared," and the few which have survived to be captured in their third or fourth year are uniformly described as presenting a large head, a long lean body, and a dull leaden color.

While we view the movement to increase our supply of fish food by artificial hatching with unmixed approbation, and esteem the cultivation of the water as a most valuable adjunct to the cultivation of the land, we repeat that it would be more in accordance with sound principle, and therefore more likely to prove beneficial, to stock our "land-locked" waters with those species whose natural habitat is fresh water, and place the fry of the true salmon (*Salmo salar*) in those waters only which afford what the lawyers call free ingress, egress and regress to the waters of the ocean, for in such enterprises it is better to follow than to force nature.—*Bellerive Intelligencer*.

NOTES ON THE NATURAL HISTORY OF LABRADOR.

(Mammals, continued.)

BY W. A. STEARNS.

ARCTOMYX MONAX, (Linné) Schreber.
Woodchuck Whistler.—Common at Mingan, growing scarce towards Bonne Esperance.

CASTOR FIBER, Linné. *Beaver*.—Common in inland ponds all along the coast in furring season, but growing rapidly scarce.

ZAPUS HUDSONIUS, (Zimmerman) Coues.
Deer Mouse. Jumping Mouse.—Not rare on the dry tops of many of the islands along the coast.

HESPEROMYS LEUCOPUS, (Raf.) Le Conte.
White-footed Mouse.—Occurs probably about equally abundant with *Z. Hudsonius*.

A species of *ARVICOLA*, or *Meadow Mouse* is very abundant in summer.

FIBER ZIBETHICUS, (Linné) Cuvier. *Muskrat*.—Very common in the ponds inland all along the coast, at least to Belle Isle.

ERETHIZON DORSATUM, (Linné) F. Cuvier. *White-haired Canadian Porcupine*.—Very common along the coast certain years: periodical. Killed by the Indians for food.

LEPUS AMERICANUS, Erxleben, var. *AMERICANUS*. *Northern Varying Hare*.—Common, some years even abundant.

[*LEPUS AMERICANUS*, Erxleben, var. *VIRGINIANUS*. *Southern Varying Hare*.—Occurs in Newfoundland, but has not yet been recorded from Labrador.]

VESPERTILIO SUBULATUS, Say. *Little Brown Bat*.—A specimen flew on board our vessel one night, when about opposite Natashquan, and was secured. Other species doubtless occur.

BIRDS.

The following list of birds comprises those collected during a stay of twelve months on the coast in 1880-'81, and also some additions made the summer of 1882. A few are added on the authority of Dr. Coes in 1860. I think that the number of land birds will probably be largely increased by further investigation:

1. *MERULA MIGRATORIA*. *Robin*.—Saw a small flock at Old Fort Bay, October 10, 1881; shot a specimen April 26, 1882; found them breeding in the interior in June, same year.

2. *HYLOCICHLA MUSTELINA*.* *Wood Thrush*.—Certainly heard this bird repeatedly—other persons present verified the same—10 miles up Esquimaux River, one day late in July.

3. *SAXICOLA GENANTHE*. *Stonechat*.—Dr. Coes procured a single specimen at Henley Harbor, August 25, 1860.

4. *REGULUS CALENDULA*. *Ruby-crowned Kinglet*.—Shot a single specimen at Old Fort Island, October 11, 1881. Dr. Coes shot one August 6, 1860, at Rigoulette.

5. *PARUS HUDSONICUS*. *Hudsonian Chickadee*.—Abundant everywhere along the coast all the year.

6. *BREMOPHILA ALPESTRIS*. *Shore Lark*.—Common everywhere, except in winter.

7. *ANTHUS LUDOVICIANUS*. *Titlark*.—Common everywhere, except in winter.

* More like *H. alicie* (Gray-checked Thrush), since the Wood Thrush is not known to occur even so far north as the southern shores of the Gulf of St. Lawrence.
—R. R.

8. *DENDRECA CORONATA*. *Yellow-rumped Warbler*.—Common in interior. Breeds.

9. *DENDRECA STRIATA*. *Black-poll Warbler*.—Common in interior. Breeds.

10. *GEOTHLYPIS TRICHAS*. *Maryland Yellowthroat*.—Common at Natashquan.

11. *SIURUS AURICAPILLUS*. *Golden-crowned Thrush*.—Not uncommon in the interior. Breeds.

12. *SIURUS NÆVIUS*. *Water Thrush*.—Not uncommon in the interior. Breeds.

13. *MYIODIOCTES PUSILLUS*. *Green Black-capped Flycatcher*.—A specimen was shot by D. H. Talbot, Sioux City, Iowa; 10 miles up Esquimaux River; another specimen was seen and others heard. The bird cannot be rare.

14. *PINICOLA ENUCLEATOR*. *Pine Grosbeak*.—Common in fall and winter.

15. *ÆGIOTHUS LINARIA*. *Red-poll Linnet*.—Rather common in the interior. Breeds.

16. *PLECTROPHANES NIVALIS*. *Snow Bunting*.—Common in large flocks in winter.

17. *CENTROPHANES LAPPONICUS*. *Lapland Longspur*.—Rather common.

18. *PASSERCULUS SANDWICHENSIS SAVANNA*. *Savanna Sparrow*.—Abundant everywhere. Breeds. None seen in winter.

19. *JUNCO HYEMALIS*. *Snow Bird*.—Not rare in spring and fall. Obtained several near Old Fort.

20. *SPIZELLA MONTICOLA*. *Tree Sparrow*.—Not rare in spring and fall. With the last.

21. *ZONOTRICHIA ALBICOLLIS*. *White-throated Sparrow*.—Common everywhere. Breeds.

22. *ZONOTRICHIA LEUCOPHRYS*. *White-crowned Sparrow*.—Common everywhere. Breeds.

23. *PASSERELLA ILIACA*. *Fox-colored Sparrow*.—Common at least as far as Red Bay in spring and fall, if not in summer. (This sparrow breeds abundantly along the coast from Mingan to Belle Isle—C.)

24. *SCOLECOPHAGUS FERRUGINEUS*. *Rusty Blackbird*.—Common and breeds at least as far as L'Anse Amour.

25. *CORVUS CORAX*. *Raven*.—Abundant all the year.

26. *CORVUS AMERICANUS*. *Common Crow*.—A few are occasionally seen as far north as Esquimaux River.

27. *PERISOREUS CANADENSIS*. *Canada Jay*.—Abundant inland all the year.

28. *CHORDEILES POPETUE*. *Night Hawk*.—Common at Natashquan.

29. *CERYLE ALCYON*. *Kingfisher*.—Com-

mon at least as far as Esquimaux River. Breeds.

30. *PICUS VILLOsus*. *Hairy Woodpecker*.—Common inland in winter at least about Esquimaux River.

31. *PICUS PUBESCENS*. *Downy Woodpecker*.—I found this common with the last.

32. *PICOIDES ARCTICUS*. *Black-backed three-toed Woodpecker*.—On authority quoted by Cones. (Accidental behind the City of Quebec—C.)

33. *COLAPTES AURATUS*. *Golden-winged Woodpecker*.—Not rare, at least as far as L'Anse Claire.

34. *BUBO VIRGINIANUS*. *Great Horned Owl*.—Not rare in neighbourhood of Esquimaux River.

35. *ASIO ACCIPITRINUS*. *Short-eared Owl*.—A specimen was brought to me by one of the young fellows at Old Fort.

36. *NYCTEA SCANDIACA*. *Snowy Owl*.—Not rare in winter. All along the coast to Red Bay, at least, if not further.

37. *CIRCUS HUDSONIUS*. *Marsh Hawk*.—One specimen found at Dead Island Harbor.

38. *ACCIPITER COOPERI*. *Cooper's Hawk*.—Seen several times.

39. *ASTUR ATRICAPILLUS*. *Goshawk*.—Dr. Cones obtained one specimen.

40. *HIEROFALCO GYRFALCO OBSOLETUS*? *Labrador Gryffalcon*?—Saw the bird, and have no doubt but that he had a nest on an inaccessible crag near the house, but was unable to obtain it.

41. *ÆSALON COLUMBARIUS*. *Pigeon Hawk*.—Seen several times on our way down the coast.

42. *CANACE CANADENSIS*. *Spruce Partridge*.—Common all the year around.

43. *LAGOPUS ALBUS*. *Willow Ptarmigan*.—Not rare. In winter generally common.

44. *LAGOPUS RUPESTRIS*. *Rock Ptarmigan*.—Not rare. Generally common in winter.

45. *SQUATAROLA HELVETICA*. *Black-bellied Plover*.—Common in spring and fall.

46. *CHARADRIUS DOMINICUS*. *Golden Plover*.—A specimen of this bird was obtained at Fox Island, Saint Lewis Sound.

47. *ÆGIALITES SEMIPALMATUS*. *Semipalmated Plover*.—Common. Breeds everywhere.

48. *STREPSILAS INTERPRES*. *Turnstone*.—Common at Dead Island and along the coast in small flocks.

49. *PHALAROPUS FULICARIUS*. *Red Phalarope*.—Given by Dr. Cones, who procured them from off Belle Isle.

50. *GALLINAGO WILSONI*. *American Snipe*.—Given by Dr. Cones. A single specimen secured.

51. *MACRORHAMPHUS GRISEUS*. *Red-breasted Snipe*.—Given by Dr. Cones. A single specimen secured.

52. *EREUNETES PUSILLUS*. *Semipalmated Sandpiper*.—Common in spring and fall.

53. *ACTODROMAS MINUTILLA*. *Least Sandpiper*.—Common in spring and fall. Breeds in summer.

54. *ACTODROMAS MACULATA*. *Pectoral Sandpiper*.—Occasional in fall.

55. *ACTODROMAS BONAPARTEI*. *Bonaparte's Sandpiper*.—Abundant in large flocks in spring and fall. A few breed.

56. *TRINGA CANUTUS*. *Knot*.—Not very common in fall.

57. *CALIDRIS ARENARIA*. *Sanderling*.—Common in flocks of 20 and 30 at Old Fort Island.

58. *LI MOSA ILEMASTICA*. *Hudsonian Godwit*.—I obtained a single specimen at Old Fort Island. It is said to be very rare.

59. *TOTANUS MELANOLEUCUS*. *Greater Yellowlegs*.—Not rare in fall and spring. I think breeds. Have found it late into breeding season.

60. *RHYACOPHILUS SOLITARIUS*. *Solitary Sandpiper*.—Not rare in spring and fall. Breeds.

61. *TRINGOIDES MACULARIUS*. *Spotted Sandpiper*.—Not rare. Breeds.

62. *NUMENIUS HUDSONICUS*. *Hudsonian or Jack Curlew*.—Not rare in fall.

63. *NUMENIUS BOREALIS*. *Esquimaux Curlew*.—Formerly abundant; now common in the interior in fall.

64. *BOTAURUS LENTIGINOSUS*. *American Bittern*.—Authority of Dr. Cones. One specimen.

65. *BERNICLA CANADENSIS*. *Canada Goose*.—Not rare in spring and fall.

66. *BERNICLA BRENTA*. *Brant Goose*.—Rather common at least as far north as Cape Whittle.

67. *ANAS OBSCURA*. *Black Duck*.—Common; said to breed.

68. *DAFLA ACUTA*. *Pintail Duck*.—Rare. I obtained one specimen of a pair seen at Old Fort Island. One taken a short time before near same place.

69. *MARECA AMERICANA*. *Widgeon*.—Occurs as far as Natashquan; said to occur inland at Esquimaux River.

70. *NETTION CRECCA*. *English Teal*.—Au-

thority of Dr. Coues, who obtained one specimen.

71. NETTION CAROLINENSIS. *Green Winged Teal*.—Dr Coues obtained one single specimen at Rigoulette.

72. AIX SPONSA. *Wood Duck*.—Not rare in interior. Breeds in hollow trees

73. ÆTHYIA AMERICANA. *Redhead*.—I saw a single specimen in the water at Bale des Roches, 23 September. Am told that it is common.

74. CLANGULA ISLANDICA. *Barrow's Golden Eye*.—Common in rivers as far as Natashquan. Said to occur in Esquimaux River in mild winters.

Nests of this species have been found in the woods near Lake Champlain, and the ducklings were seen commonly on the Godbout River during summer.—C.

75. CLANGULA ALBEOLA. *Buffle-head Duck*.—Common in fall.

76. HARELDA GLACIALIS. *Long-tailed Duck*.—Common in mouths of rivers in spring and fall.

77. HISTRIONICUS MINUTUS. *Harlequin Duck*.—Rather rare. Mouths of rivers, spring and fall. Probably breeds

78. SOMATERIA MOLLISSIMA DRESSERI. *American Eider Duck*.—Abundant everywhere. Breeds.

79. SOMATERIA SPECTABILIS. *King Eider*.—Abundant in spring in large flocks. I shot a great many of them. It is said to breed in this region occasionally. In *The Canadian Sportsman and Naturalist*, vol. 1, No. 7, July 15th, 1881, p. 51, in an article headed "Bird-nesting in Labrador," Mr. Napoleon A. Comeau, the writer, whom I know personally and who spoke with me personally to the same purport, says that on a small island opposite Mingan: "Indeed, one small island, visited by us, was almost covered with the nests of this species (*S. mollissima*), and here we first found the nest of its congener, the *King Eider* (*S. spectabilis*)." This is, I believe, the first record of this rare nest found on the Atlantic.

"Bird-nesting in Labrador" was written by Mr. William Couper, the Editor of this Journal.

SOMATERIA V-NIGRA. *Pacific Eider*.—Abundant in large flocks in spring. I myself obtained specimens that had the decided "V-shaped black mark" on the chin, and was told by the natives that there were "three different species of spring ducks so near alike that you could hardly tell the difference." This species has been doubted by several authorities. I still believe that I can secure specimens and prove its occurrence unquestionably.

80. EDEMIA AMERICANA. *Black Scoter*.—Abundant. Breeds by inland ponds.

81. MELANETTA VELVETINA. *White-winged coot*.—Common in fall, rare in spring. Not known to breed.

82. PELIONETTA PERSPICILLATA. *Sea Coot*.—Common in spring, rare in late fall. Not known to breed

83. MERGUS MERGANSER AMERICANUS. *Fish Duck*.—I have seen one specimen taken near Fort Island.

84. MERGUS SERRATOR. *Red-breasted Merganser*.—Common in spring and fall. Breeds occasionally.

85. LOPHODYTES CUCULLATUS. *Hooded Merganser*.—Rather rare but occasional.

86. SULA BASSANA. *Gannet*.—Common in Gulf of Saint Lawrence. Occasionally seen near the Labrador coast.

87. PHALACROCORAX CARBO. *Common Cormorant*.—Abundant off Meccattina Islands. Breeds.

88. PHALACROCORAX DILOPHUS. *Double-crested Cormorant*.—Common with the former.

89. STERCORARIUS POMATORHINUS. *Pomarine Jaeger*.—I have seen a specimen of this species I think taken near the mouth of Esquimaux River. Dr. Coues also obtained it.

90. STERCORARIUS PARASITICUS. *Richardson's Jaeger*.—Shot a specimen in St. Lawrence River, about opposite Point des Monts.

91. STERCORARIUS BUFFONI. *Buffon's Jaeger*.—Seen by Dr. Coues.

92. LARUS GLAUCUS. *Burgomaster*.—Not rare. I obtained several specimens. Breeds.

93. LARUS MARINUS. *Great Black-backed Gull*.—Abundant and breeds all along the Labrador coast.

94. LARUS ARGENTATUS SMITHSONIANUS. *Herring Gull*.—Common. Breeds everywhere.

95. RISSA TRIDACTYLA. *Kiltiwake Gull*.—Common in spring and fall. Breeds occasionally.

96. LARUS PHILADELPHIÆ. *Bonaparte's Gull*.—Common in large flocks in fall, perhaps spring, but not known to breed on the Labrador coast.

97. STERNA MACRURA. *Arctic Tern*.—An abundant spring and fall migrant in the Gulf. (I found nests of this Tern abundant on islands near Natashquan.—C.)

98. STERNA FLUVIATILIS. *Common Tern*.—Seen at Regoulette by Dr. Coues.

99. FULMARS GLACIALIS. *Fulmar*.—Recorded by Dr. Coues off Belle Isle.

100. CYMOCYTURA LEUCORHOEA. *Leach's Petrel*.—Common off coast as far at least as to Belle Isle.

101. PUFFINUS MAJOR. *Greater Shearwater*.—Not rare off shore along the whole coast.

102. *Puffinus fuliginosus*. *Sooty Shearwater*.—A few were seen by Dr. Coues in company with *P. major*.

103. *Colymbus torquatus*. *Loon*.—Abundant. Breeds inland.

104. *Colymbus septentrionalis*. *Red-throated Diver*. Dr. Coues obtained "two eggs supposed to be of this species at Sloop Harbor, on the 4th of July."

105. *Colymbus arcticus*. *Black-throated Diver*.—Two specimens were obtained of this rare bird off the Labrador coast by one of the French priests at Bersimis, in 1880.

106. *Podiceps holbollii*. *American Red-necked Grebe*.—Not rare in spring and fall. Occasional breeds.

107. *Utania torda*. *Razor-billed Auk*.—Abundant, more so north of Esquimaux River. Breeds.

108. *Fratercula arctica*. *Puffin*.—Abundant on one or two islands near Bradore; not rare in other localities along the coast.

109. *Alle nigricans*. *Sea Dove*.—Abundant certain seasons. Occasional all along the coast.

110. *Uria grylle*. *Black Guillemot*.—Common everywhere in spring and fall. Breeds in certain localities abundantly, though not so much so as either *U. torda*, or *F. arctica*, or *L. troile*.

111. *Lomvia troile*. *Foolish Guillemot*.—Abundant; more so south of Esquimaux River. Breeds like *U. torda* in vast colonies on the islands along the coast.

FISHES.

A very few of the species in this most important department have been secured this year, 1882; and though they are only the most common and abundant species, they will perhaps serve to show a part of the characteristic fish fauna of this region.

Otenolabrus adpersus. *Common Blue Perch*.—Was very common all about Cape Britain.

Gasterosteus aculeatus. *Common Stickleback*.—Abundant in large swarms everywhere about the shoal waters of Cape Britain. I saw two specimens of *Gasterosteus bleekeri*, taken off coast in the midst of a large sea, sporting in immense areas close by the vessel.

Gasterosteus pungitius. Was found occasionally off Cape Breton coast.

Osmerus mordax. *Smelt*.—Common in August, all along the shoal water off the wharves of Cape Britain.

Scomber scombrus. *Mackerel*.—Seldom taken at all on the Labrador coast, except as isolated individuals or by twos and threes. One per-

son at Triangle Harbor took eight while we were there, but said that he had not taken as many before in as many years.

Salmo salar. *Salmon*.—Common everywhere in the mouths of rivers all along the Labrador coast. The most abundant species of the family.

Salvelinus fontinalis. *Speckled Brook-trout*.—Abundant in all the streams along the coast, seldom growing large. Is said not to be found in the ponds or far from the mouths of the streams, not mingling much if any with the large sea trout.

Mallotus villosus. *Caperlin*.—Abundant in large colonies in shoal water all along the coast. Used for cod bait, and pursued and fed on by the codfish in the water. When traveling in these large bodies the movements of the whole body seem to be almost simultaneous, and though the front of the phalanx is generally composed of a single fish, the two sides fall off triangularly, so that strange to say, the change of direction appears, if it is not in reality, to be simply the assuming the chief position by any fish, in any position along the line, while all the others immediately fall into their proper place, and the whole body moves off as an acute triangular shaped mass of living Caperlin. When few in number, they delight to swim singly, or by twos or threes in a long line, repeatedly sinking and swimming under the vessel from side to side, shortly returning again.

Clupea harengus. *English Herring*.—Abundant north of Blanc Sablon, growing more and more so all along the Labrador coast, the further down which are the greatest catches. The young fish remain about in the waters all the year, if the reports of several different individuals can be credited. The people tell me that they refrain from catching the fish until September, so that the young may have a chance to grow to the fine, large fish for which this region is so celebrated, but that the nets might be drawn full of small fish in any month of the year when the ice did not interfere.

Gadus morhua. *Common Cod*.—Abundant everywhere; but usually the fish are small, and seldom the size of those taken off the Grand Banks. Most of them go to France, where they seem to be preferred to the larger fish. The larger fish are taken chiefly in the fall, in deep water—70 to 100 fathoms—the spring and summer fish average 3 to 8 and 10 pounds, and are taken in about 8 to 15 fathoms of water. The Squid is not common nor even "not rare" along the Labrador coast. Although it is an abundant bait off Newfoundland, it is very rare along the Labrador coast.

THE

CANADIAN SPORTSMAN



AND

NATURALIST

A
MONTHLY
JOURNAL



VOL. III.
Nos.
XI. & XII.
1883.

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Nos. II AND 12.

MONTREAL, DECEMBER, 1883.

VOL. III.

WILLIAM COUPER, Editor.

TO OUR SUBSCRIBERS.

This number terminates the third volume of the *Canadian Sportsman and Naturalist*. We regret to inform our subscribers that the publication ends with this issue. For some time past it became necessary to devote more time to our business than heretofore, owing to the large amount of work we have been favoured with; therefore we could not give the magazine the attention and labour required to continue it. We take this opportunity of thanking our friends who have assisted us. Although the publication will cease, our efforts will not have been in vain, as many valuable records can be found in its pages.

To subscribers who have remitted in advance, we will return the money, and those in arrears will oblige us by remitting subscriptions now due.

"THE AUK."

We have received the first number of "The Auk," a continuation of "The Bulletin of the Nuttall Ornithological Club," now issued as a quarterly journal of ornithology by the American Ornithological Union. It is an 8vo. of 108 pages, beautifully printed and full of interest to the student of North American birds. We are quite interested in the discussion by Drs. Merriam and Coues on bird nomenclature. It is only by the investigations of such talented men that we can ultimately arrive at a proper knowledge of ornithological literature. The writers will doubtless arrive at a proper understanding regarding "Ornithophilicalities;" they have commenced the matter and it must now be ended satisfactorily on one side or the other. In the meantime we think Dr. Coues has found a strong, energetic rival and critic in

Dr. Merriam. "The Auk" is published at \$3.00 a year, and it is really a cheap, useful and intelligent journal, which we commend to all lovers and students of Canadian birds.—C.

THE ART OF DECEIVING.

HOW FISH CAN BE INDUCED TO NIBBLE ARTIFICIAL FLIES.

The *Pall Mall Gazette*, in discussing the question of artificial flies for piscatorial purposes, says: Flies are commonly regarded as a necessary evil, but apart from this popular prejudice they have a special interest for fish and for fishermen. Though the flies on which fish delight to feast are legion in number, the artificial flies employed by the angler, are many more. Walton confines his list to twelve, which he quaintly calls "a jury likely to betray and condemn all the trouts in the river." But his knowledge of the subject was very limited, and it is plain from his description that he regarded them rather as fancy creations than as imitations of real insects. Many are the materials and many the devices wherewith art seeks to imitate nature. Perhaps the closest approach to a real fly body is the strip of twisted quill, taken from the opaque part of the feather stem, which is used in the construction of the "blue upright" and some other flies. Here the joints of the real fly's body, and its alternations of color, are closely imitated by the windings of the quill along the hook. Woolly bodies, however, are commoner. A very good body is made by twisting strips of peacock's "harl" (the fibres of the peacock's feather) closely round the hook. This is deservedly held in high esteem, but probably not one angler in twenty knows wherein its excellence consists. The artificial fly known as the "governour," intended to represent the ground bee, as a body of this kind; yet if the bodies of the natural and the artificial insects be compared they seems widely different. The one is a sober brown, covered like many other winged insects, with a short crop of very fine hairs; the other gleams resplendent with all the rainbow hues of the peacock's plumage. But sink both in the water, and each will appear of a sivery gray color. The short fluff of the natural bee and

the harl of the "governour's" body each retain a number of imprisoned air bubbles; hence the similarity of effects, and hence, too, the value of harl as a "body."

But, indeed, with all that ingenuity can devise, the artificial fly is but a poor imitation of its living prototype. And hence the much-vexed question. Do fish take a specific artificial fly for the specific natural fly that it is intended to represent! Now, salmon and sea trout flies cannot possibly be mistaken for any natural insects, inasmuch as there is nothing in nature which they resemble. It has been suggested that the gaudy salmon fly may be mistaken for some species of dragon fly. But, in the first place, dragon flies are not accustomed to career up stream eight inches or a foot below the surface of the water, which is the method of working the fly in salmon-fishing; and secondly, neither salmon nor salmon trout feed on dragon flies. It must, therefore, be something in the color which allures them, and not any similarity to a familiar object of food. It is more doubtful whether the same explanation holds good for trout and other fish. In the case of a distinctive fly, like the mayfly, the imitation must be taken for the real fly. So, too, when fish will rise only to an imitation of the fly on the water. Sometimes all depends on successfully imitating this, but at others the fish seem to prefer a different fly, or, what is stranger still a fancy fly. And this readmits the old element of perplexity. There are various kinds of fancy flies, but besides these many flies, originally intended as imitations, have become, by alterations in their size, fancy flies for all intents and purposes. The "red palmer" is a good instance of this. Originally intended to represent the "wooly bear," a caterpillar at least two inches long, the fly, as now tied, rarely exceeds $\frac{3}{4}$ of an inch in length and is usually much smaller. Yet is hardly a more successful fly, though what it is taken for is still a mystery. The trout of the Scotch lochs again greatly prefer fancy to natural flies. There is plenty of the latter on these waters, but the artificial flies always used are entirely fancy creations. Again, the perch, which does not feed on natural flies at all, will often rise boldly to a large artificial. Thus it seems that if fish in some cases certainly regard the artificial fly as an imitation of a familiar insect, in other they certainly do nothing of the kind, and are prompted to rise to it either with the idea that though strange to them, it is probably good to eat, or from

mere curiosity, or possibly under some sort of fascination akin to that which attracts moths, birds, and indeed fish also, to a light. The best way of presenting flies to the fish is a much less perplexing question: but even in this matter piscine tastes display some curious variations. In certain rivers, such as the Wandle, the fly must be kept dry, but in most streams it answer better when slightly submerged. This, indeed, might be expected. Since it is impossible to make a close estimation of a living fly, there is a better chance of deceiving the fish by presenting the bait to them as a drowned fly washed down by the current. It should be remembered also that the actual insects, when so carried down, present anything but a tidy appearance, and consequently that an old and touselled fly will often succeed where a pick-and-span specimen has utterly failed.

ANIMALS THAT HAVE DISAPPEARED IN RECENT TIMES.

In examining a collection of fossils, where the sand of limestones are almost entirely made up of organic remains, the most natural impression conveyed is that their extinction has been the result of a mighty cataclysm, some unexpected throb of nature that produced at one fell swoop the destruction of the continental fauna, but investigation shows the reverse to be the case. When extinction is not produced by man, it is the outcome of certain natural causes, reached only through long eras of time. Ethnologists have shown beyond a doubt that early man lived contemporaneously with many huge forms that are now extinct. Within a very few years some of these animals have passed away. One of the most interesting of recent cases is that of the great ank or *Alca impennis*. The skins or bones are so rare that each individual has its history and price; the latter might be quoted at \$1000 or more, as only 60 specimens are known in the world. No living specimen has been obtained for 40 years. In 1869 the Museum of Natural History at Central Park purchased one in London for \$750, and the bird and egg, both fine specimens, can be seen there. The ank was about three feet in height, its wings only three or four inches long. It was an inhabitant of the very highest latitudes, and at one time extremely common in the Arctic seas. The ancient shell heaps on the Atlantic coast shows abundant remains of this bird as far

south as the New England coast. Nuttall, in 1834, records the birds as then breeding in great numbers. "As a diver he is unrivalled," he says, "having almost the velocity of birds of the air. They breed in the Faroe Islands and in Iceland. Greenland and Newfoundland, nesting among the cliffs, laying but one egg each. They are so unprolific that if the egg be destroyed no other is laid during the season. It is sometimes known to lay at St. Kilda and in Papa Wastra." The last seen alive were at the Funks, a small island in the coast of Newfoundland. In 1844, the last known to be alive on the eastern continent were seen at Iceland. In 1870 a dead, frozen specimen was found at Labrador, which though in poor condition, was sold in London for \$200. The only specimens in this country are at Central Park, Vassar College, Philadelphia Academy of Sciences, Cambridge University, and the National Museum. The single egg that the great auk yearly deposited was evidently not enough to insure its preservation, and year after year it became less abundant, perhaps killed by the Indians along our coast. Finally, the last one was destroyed, and in 200 years more its existence will be a legend and the steel engravings of the present specimens the only reminders of the giant of the auks.

Of the Labrador duck (*Camptolemus*) still less is known. In former years it was common on the north-eastern coast of North America and as far south as New Jersey, but for many years not a specimen has been seen or found, and the presumption is that they have met the fate of the great auk.

Among the Maoris, natives of New Zealand, there are traditions that many years ago there lived in their country a race of gigantic birds—the moa—that served as food for their remote ancestors. They are also positive that some of the largest birds have lived within the modern times, while in the interior the natives say that the gigantic bird may yet exist. They called the bird moa from its gigantic size, and the legends tell of its wonderful plumes and tail feathers, that were only worn by the great chiefs of the ancient Moaris. Its enormous bones were made into fish-hooks and various implements. These facts of rumours fell into the hands of the Rev. Dr. Colenso, a missionary in New Zealand some years ago, and his efforts to investigate them resulted in the discovery of a number of huge bones that at least confirmed the existence of the birds. A few years later, Mr. Walter Mantell,

went into the interior and settled himself among the Moaris, as Mr. Cashing, of the Smithsonian, has among the Pueblo Indians, to learn all he could of their traditions. As a result of his work he collected seven or eight hundred bones of a number of different species, which are now in the British Museum, and settled to his own satisfaction at least that the birds had flourished within comparatively modern times, and had been exterminated by the early inhabitants of the country. Some of the remains found by Mr. Mantell, standing upright, point to the conclusion that some of the larger ones became mired in the swamp, becoming victims of their own weight. Mr. Mantell secured a number of fine specimens and of great eggs, one of which would have been a meal for ten men. The bones of these birds are much larger than those of an ox, and some of the birds themselves were 14 feet in height. The finest collection of them in this country is owned by the Museum of Natural History at Central Park.

In 1847 an English scientist discovered the remains of a new bird in the menacconite sand at Waingougore, New Zealand. The bones consisted of the cranium, mandibles, sternum, humerus, femur, tibia, and tarsometatarsals, of a gigantic rail. Prof. Owen examined them, and stated from their osteological characteristics they belong to a large modified fowl of the same family of the *Grallæ* as the *Porphyrio* and *Brachypteryx*, and, like the latter birds, without the power of flight. From his deductions a new genus was established for its reception—the *Notornis*. Up to 1850 these fossil remains were thought to be only remnants of the bird; but in that year, much to the astonishment of scientists, a living representative of the species and genus was found in an unfrequented part of the island of New Zealand; since then a living one has never been seen, and it was undoubtedly the last of the race. The Moaris have a tradition that the bird was once very common, and a favorite article of food with their ancestors. It was called by them the Dodo, and by the natives in the south Tokohe. Mr. Mantell was the fortunate finder of the bird, obtaining the skin from some sealers who were fishing among the unfrequented islets of Dusky Bay. It appeared, according to Mr. Mantell, that when frequenting the coast in search of seals and other game, the men observed on the snow with which the ground was covered the foot-tracks of a large and

strange bird, and after following the trail for a considerable distance they caught sight of the object of their search, which ran with great speed. For a long time it distanced the dogs, but was at length driven up a gully in Resolution Island and captured alive. It uttered loud screams and fought and struggled violently; it was kept alive three or four days, and then (the men being ignorant of its value) was killed and the body roasted and eaten by the crew, each partaking of the dainty, which was said to be delicious. The skin, with the skull and bones of the feet and legs, was preserved, and obtained by Mr. Mantell, and in this manner the last of the race was preserved. The bird was a magnificent creature, about two feet high; the beak was short and strong and the legs were beautiful scarlet color. The neck and body were dark purple, the wings and back being shot with green and gold. The wings were short and round and remarkably feeble both in structure and plumage. The skeleton is now in the collection of the British Museum; price, \$800. Here also can be seen the remains of a nocturnal parrot (*Festor productus*) that years ago inhabited Phillips Island, an isolated spot in the Southern Ocean, five miles in length, but now, according to the Norfolk Islanders who are only a few miles distant, has entirely disappeared.

ON LABRADOR.

DEAR SIR,—A few words about the Natural History of Labrador, while you are on the subject, seem to me to be especially appropriate here now as you are finishing my report on that region in the *Sportsman*. The forthcoming Bulletin of the U. S. National Museum Vol. V, I believe, will contain a report on the Invertebrates which I collected in dredging in the odd moments of three weeks on the coast, while upon an excursion there. I have not seen at this time, January 22, any sheets of the report myself, but understand that it combines, or adds a resumé of the work done in that region by Prof. Packard in 1860 therabouts and published in the *Memoir* of the Boston Society of N. H. Now that good work remains to be done in that part of the coast can easily be seen. These preliminary reports show *part* of the field. What could be expected if one acquainted well with the coast, should go there and spend the summer collecting and dredging, with apparatus for this and for fishing; and with plenty of alcohol

and cans and jars. I could confidently predict a perfectly magnificent harvest for any private individual or any institution who should make a small outlay for this purpose. A small house could be easily obtained for the summer, or better one built for the purpose at a small cost, and a permanent station made where renewed investigation could be carried on each year with a select corps, say of one good man with one or two assistants, and the result might even compare well with the work at present being done by the U. S. Fish Commissioners of the National Museum at Washington. There is no doubt but that the results would be invaluable in the investigations into the Labrador and northern fisheries. I believe that \$1000 would cover *all* expenses for the first year's work, and bring in such a host of rich and valuable material as to fully pay for all first cost of outfit and the season's work.

I want to say here, that I believe that this would aid in devising means of increasing the yearly "catch" in the Labrador and neighbouring waters. It is a fact past dispute,—at least to one who has spent all the seasons with the poorly fed and cared for inhabitants,—though the majority have none to blame but themselves and their own idleness—that the fisheries are not what they used to be on this coast. Yet to show that the fish *are there* yet, and in a goodly number, note the success of several large firms during the summers of '83 and '82. I believe that the establishment of such a station by the Canada Government would give a new impulse to the fisheries there, and everywhere within Canada waters. I believe that it is possible to revive the spirits of the "faint hearted," and that even the "habitually lazy," of which there are a great number on the coast would turn to and pick up more courage, and wish to improve their conditions and what is \$1000 if it accomplishes the double result of awakening renewed impulses of thrift in two to three hundred people, besides bringing in a harvest of its own peculiar kind in a complete display of the marine products of the fishing grounds; a complete series of the fishes in their different and peculiar stages of growth; and a complete practically illustrated collection of the Natural History of one of the most interesting regions of northern North America. How *much* more profitable, this would be for science, and the world in general, than the fly away cruise of some "flying Dutchman"

to "Cape Fly-away" as Irving calls it, or the North Pole, with its loss of life, its expense, and its "no results." I believe the one as fully and as utterly practicable as the other is fully and utterly impracticable. It would probably not be difficult to find a man properly fitted for the work and ready and willing to undertake it.

Very respectfully, yours,

WINFRID A. STEARNS.

Acting curator of
Mass. State Ag'l. College.

Amherst, Mass., U. S. A., Jan. 22nd 1884.

American Ornithologists' Union.

BIRD MIGRATION.

At the first congress of the American Ornithologists' Union, held in September 1883, a Committee was appointed on the Migration of Birds. The purpose of this Committee is to investigate in all its bearings, and to the fullest extent possible, the subject of the migration of birds in the United States and British North America. The work will not be limited to the accumulation of records of the times of arrival and departure of different species, but will embrace the collection of all data that may aid in determining the causes which influence the progress of migration from season to season. For example, severe storms, gales of wind, protracted periods of unusually high or low temperature (for the locality and time of year) are among the admospheric condition that are known to exert marked effects upon the movements of birds. The opening of the leaves and the flowering of certain plants, with the correlative appearance of a multitude of insects, are also among the actors that have to do with the abundance of many species. Hence the careful registration of certain meteorological phenomena, and of the state of advancing vegetation from day to day, will constitute prominent items in the record books of the observer.

For the purpose of rendering the result of the season's work as full and valuable as possible, the Committee earnestly solicits the co-operation of every ornithologist, field-collector, sportsman, and observer of nature in North America. Indeed, a large corps of observers is absolutely essential to the success of the undertaking, and the Committee hopes to receive substantial aid from many who profess no knowledge of ornithology.

PLAN OF THE WORK. — For convenience in collecting and arranging the enormous mass of material which will be accumulated by the joint labors of this army of field workers, it has been deemed advisable to divide the vast expanse of territory embraced in the United States and British North America into thirteen Districts, each of which will be placed under the immediate direction of a competent Superintendent. The Districts, with their respective Superintendents, are :—

ALASKA, Supt., John Murdock, Smithsonian Inst., Washington, D. C.

NORTH-WEST TERRITORIES, Supt., Ernest E. T. Seton, Assinaboia, *via* Carberry, Manitoba.

NEWFOUNDLAND, Supt., James P. Howley, St. John's, Newfoundland.

BRITISH COLUMBIA, Supt., (not yet determined).

MANITOBA, Prof. W. W. Cooke, Caddo, Indian Territory.

CANADA, Supt., Montague Chamberlain, St. John, New Brunswick

ATLANTIC SEABOARD, (Lighthouse's and Lightships from Canada to the Gulf of Mexico), Supt, (not yet determined).

NEW ENGLAND, Supt, John H. Sage, Portland, Conn.

ATLANTIC DISTRICT, (N. York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina), Supt, Dr. A. K. Fisher, Sing Sing, New York.

MIDDLE-EASTERN DISTRICT (Southern Michigan, Indiana, Ohio, West Virginia, Kentucky and Tennessee east of the Tennessee River, Alabama, Georgia, Florida) Supt, Dr. J. M. Wheaton, Columbus, Ohio

MISSISSIPPI VALLEY (Dakota, Minnesota, Wisconsin, Nebraska, Iowa, Illinois, Kansas, Missouri, Indian Territory, Arkansas, the small portions of Kentucky and Tennessee west of the Tennessee River, Texas, Louisiana, Mississippi), Supt, Prof. W. W. Cooke, Caddo, Indian Territory.

ROCKY MOUNTAIN DISTRICT (Idaho, Montana, Wyoming, Utah, Colorado, Arizona, New Mexico), Supt., Dr. Edgar A. Mearns.

PACIFIC DISTRICT (Washington, Oregon, California, Nevada), Supt., L. Belding, Stockton, California.

The home of each observer is called a Station, and is recorded by number upon the books of the Committee. The Committee particularly requests that all persons who read this circular, and are willing to aid in the work, will *immediately* communicate with the Superintendents, of their respective Districts. Those residing in Districts whose Superinten-

dents have not as yet been named may address the Chairman.

It is the duty of each Superintendent to exert himself to the utmost to increase the number of observers in his District; to answer the questions they may put to him concerning the details of the work, etc.; to collect at frequent intervals the product of their labors; to ascertain from these data the whereabouts of certain species in winter, and the times of leaving their winter homes; to determine if possible the number and extent of the chief avenues of migration within the limits of his District, and the average of speed at which the different species travel; to locate the *breeding areas* of the summer residents; and, finally, to submit the result of the season's work to the Chairman of the Committee. The Chairman shall, in turn, arrange, condense, and systematize the material received from Superintendents of the several Districts, and shall present to the Union the fruits of the joint labors of all the collaborators, together with any comments, deductions or generalizations he may have made upon the same.

INSTRUCTIONS TO COLLABORATORS.—The data collected may conveniently be arranged in three general classes: *a.* Ornithological Phenomena. *b.* Meteorological Phenomena. *c.* Contemporary and Correlative Phenomena.

(*a.*) *Ornithological Phenomena.*

Each observer is requested to prepare, at his earliest convenience, a complete list of the birds known to occur in the vicinity of his Station, and to indicate (by the abbreviations enclosed in parentheses) to which of the following five categories each species pertains:—
1. *Permanent Residents*, or those that are found regularly throughout the entire year (R). 2. *Winter Visitors*, or those that occur only during the winter season, passing north in the spring (WV). 3. *Transient Visitors*, or those that occur only during the migrations, in spring and fall (TV). 4. *Summer Residents*, or those that are known to breed, but which depart southward before winter (SR). 5. *Accidental Visitors*, or stragglers from remote districts (AV).

It is also desirable to indicate the relative abundance of the different species, the terms to be employed for this purpose being: *Abundant, Common, Tolerably Common, Rare.*

In many species the males arrive in advance of the females, hence it is important to note the sex of the first comers, and the date at which the opposite sex is first seen.

In recording arrivals and departures, it is highly important to distinguish between the movements of the great bulk of the species and those of the forerunners or advance guard. For this purpose two dates should be recorded for the incoming, and two for the outgoing of every non-resident species, as follows:—1. The first appearance of the species (F). 2. The arrival of the bulk (BA). 3. The departure of the bulk (BD). 4. The last individual seen (L).

In addition to the above, which may be regarded as *essential data*, there are many other noteworthy details that bear more or less directly upon the complicated problems involved in the study of migration. Among such may be mentioned the bodily condition of the bird (whether fat or lean), the moult and the periods of song. The time of mating, when observed, should always be recorded.

(*b.*) *Meteorological Phenomena.*

Extended meteorological data are not required, though the observer would derive material assistance from a systematic weather record. The Committee desires information upon:—1. The direction and force of the wind. 2. The direction, character and duration of storms. 3. The general conditions of the atmosphere, including rainfall. 4. The succession of marked warm and cold waves, including a record of all sudden changes of temperature.

(*c.*) *Contemporary and Correlative Phenomena.*

The Committee desires that the data under this head be as full and complete as possible, and requests exact information upon:—1. The date at which the first toad is seen. 2. The date at which the first frog is heard. 3. The date at which the tree-toad or "peeper" is heard. 4. The dates at which certain mammals and reptiles enter upon an emergence from the state of hibernation. 5. The dates at which various insects are first seen. 6. The dates of the flowering of various plants. 7. The dates of the leafing and falling of the leaves of various trees and shrubs. 8. The dates of the breaking up and disappearance of the ice in rivers and lakes in spring, and of the freezing over of the same in the fall.

C. HART MERRIAM,

*Chairman of Committee on Migration,
Locust Grove, Lewis County,
New York.*

ON THE MOLE.

DEAR SIR,—I herewith send you some observations on the mole leaving you to add the scientific names to the little animals mentioned further on.

I believe that very few people know how voracious the common meadow mole is. I have read stories told by Indians about the Carcajou, or Wolverine killing and eating two moose in a single night, but my doubt have been almost dispelled by witnessing the glut-tony of this little creature.

One day last week two White-bellied or Wood Mice were caught in a trap; I cannot say whether the mole or the mice were caught first but in the evening one living mole was found in the trap, and two full grown Wood mice, dead, one of the latter being about half eaten. The evening of that same day, the mole was placed in an old laundry boiler and the entire dead mouse given to it, which by morning was entirely eaten bones and all except the hair. We then gave the mole a large rat just killed, when it at once proceeded to eat out its eyes, and by 4 o'clock next afternoon one side of the rat's head, bone, together with the brains, were eaten, and strange to say the mole looked no larger.

The Indians of Hudson Bay say that the Carcajou, after eating one moose, squeezes himself between two trees, which process packs what he has devoured and makes room for moose No. 2; be that as it may, our mole had no chance for any such cheating, but did all by fair eating. Our curiosity was aroused to know by what means a mole or shrew could kill mice which were larger than itself; so four large meadow mice being procured, they were placed in the boiler with the mole, which as soon as it met a mouse, showed fight, but the mouse knocked it away with its front feet and leaped as far away as it could. The mole from the first seemed not to see very plainly and started around the boiler at a lively rate reaching and scenting in all directions with its long nose like a pig that has broken into a back yard and smells the swill barrel. The mice seemed terror stricken momentarily rising on their hind legs, looking for some place to escape leaping about squeaking in their efforts to keep out of the way of the mole which pursued them constantly. The mole's mode of attack was to seize the mouse in the region of the throat. This it did by turning its head as it sprang at the mouse, at the same time utter-

ing a chattering sound. The mice would strike at, and usually knock the mole away with their front feet but if the latter got a hold of a mouse, it would then try to bite, and they would both tumble about like dogs in a fight. The little chap at last attacked one mouse and kept with it, and in about ten minutes had it killed; but even before it was dead the mole commenced eating its eyes and face. About ten minutes later the mole had devoured all the head of the mouse and continued to eat. I have captured and caged several moles this winter and they all display the same untiring greedy nature. According to my observations the little mammal under consideration eats about twice or three times its own weight of food every 24 hours and when we consider that their principal food consist of insects, it is quite bewildering to imagine the myriads one must destroy in a year. I think they are quite likely to kill hundreds of insects more than they need to eat, amongst which there may be many of our greatest pests, yet many people destroy moles and bats at every opportunity, both of which may be numbered amongst our most beneficial and harmless creatures. I would here like to mention that I think whoever kills a toad is doing wrong as they also live upon insects. I once saw a dead one that a waggon wheel had crushed, and to all appearance its stomach must have contained at that time about a score of potato beetles besides other insects.

JOHN A. MORDEN.

Hyde Park, Ont., 8 Dec. 1883.

NESTING OF THE COMMON RAIL

(*Porzana Carolina*), Niell.

Assuming that some account of the nesting, and other habits of this bird may be interesting to your readers, I send you a few remarks in regard to my experience during the past season. Excepting stuffed specimens seen in different collections, I had never noticed one of them in our part of the country, until the evening of the last of July of the present year. In the evening while returning from my farm — *Wildwood* — which lies on the north-west of this corporation, I got a glimpse of a strange bird running along the edge of a pond. The farm is near the line, which is a continuation of the Main Street of this town and adjacent are a number of small ponds formed by excavating clay for brick-making. Some

of these ponds contain water throughout the year, but owing to the continuous rain-fall of the past summer they have been constantly full. In some of those laklets there are islets covered with grass; on others tall flags and bunch grass have grown, while a few of them are partially open. It was between the most western part of these ponds that I was passing when I caught sight of this rail, and as I approached to get a nearer view, I was surprised to see it apparently walking on the water, and then, as I drew still nearer, it rose, flew over to an islet in the centre of the pond, where it disappeared. The stranger was doubtless a rail and upon reaching home I informed my family of the interesting ornithological discovery, also stating my belief that the strange voices that we had heard among the flags for some time past was now solved, and with the hope of making further interesting "finds" among the rushes, we determined to follow the search next day. Accordingly, I waded out to the islet where the bird had flown the evening before, but made no discovery. I was about to return when I got a sight of the bird rising from some bunch grass that rose out of the water near the road where we had passed almost every day since the opening of spring. On examining the place I was delighted with a view of a nest placed in a tuft of grass; it contained six eggs. This nest was formed of course dry grass, partly interwoven with the standing stalks, and raised to nearly a foot above the water. The eggs though much smaller, were of the same color, and marking as those of the American coot, being of a fleshy-brown, or dull yellow hue, dotted with different shades of purplish-brown, and averaging about one inch in length. These I took and though considerably incubated, I succeeded in saving them for my collection. After this "find" I proceeded with my boys to make a further search among the flags and grasses of the other ponds. We refurnished the bird and we were interested and amused at its peculiar movements in the water, and her mode of concealment among the water grasses. In the third pond I discovered another nest. It was similarly situated to the first one, but more concealed among tall flags. The female was sitting on it, but when I approached within a few feet, she leaped from the nest into the water. This nest contained nine eggs, and one young bird which also took to the water, and exhibited much agility at swimming and concealment. I caught it and noticed that it

was covered with black down, having a bright yellow spot on the throat, and a scarlet mark around the base of the bill. It uttered a plaintive cry somewhat like that of a young Spotted Sand-piper. Its alarms brought both the parents toward it; they splashed in the water, uttering notes resembling the "crake" of the Guinea-fowl, when excited. The common call of these rails resemble a shrill "peep," repeated a few times and ending in a rapid twitter. The eggs in this nest were nearly incubated, and when I returned to it some days after, three of the young were hatched and departed, the rest of the eggs were in the nest; these I attempted to blow, but only succeeded in the case of two, which were only partly incubated. I also noticed in the case of the first nest, that some of the eggs were much more hatched than others, from which it would seem that incubation begins when the first egg is laid and I would also infer that the male takes charge of the first part of the brood, while the female if not disturbed still remains on the nest until the whole or greater part of her set are hatched. I also found several other nests among the flags, but no more eggs of this species, but in one nest on a small islet, which appeared to have contained a large number, I found an addled egg, which, however, from its larger size, and different markings I think belonged to another species, perhaps the Virginian Rail, which I have reason to believe nested here, earlier in the season. From reading, and other sources, I conclude that this bird is the Sora, or Carolina Rail (*Porzana Carolina*). Up to the early days of October, we occasionally heard the notes, or saw specimens of the birds among the flags, or by the margins of the ponds. On the 6th of that month, we picked up one of this species—dead—but apparently uninjured and in full plumage. It may have been killed by the severe frost of the previous night. Intending, if acceptable, to continue my observations of our feathered visitant, I remain your truly,

WILLIAM L. KELLS.

Listowel, Ontario.

ST. NICHOLAS A. A.

In the November number of the *St. Nicholas* there appeared a suggestion, for the organization of a National Association for the Study of Nature, which met with a qualifying response as it was unexpected. The eager

interest which the more thoughtful of our young people take in Natural Science, was immediately shown by the great number of letters which were received by Mr. H. H. Ballard (its founder), in answer to the invitation. Chapters (branches) of the A. A. were organized in different towns, and where this was impracticable, individuals joined the Central Lenox Chapter as corresponding members. So rapid has been the growth of the Association, owing to the wide spread influence of "St. Nicholas," that there were in January, 1884, upwards of 547 Chapters and more than 1000 members which is increasing more rapidly than ever. The work is apparently only begun, and in a few years, it seems likely that they shall have more than 10,000 active members. The A. A. was originally started as a children's society, but, to our great delight, parents and teachers have taken as great an interest in it as the younger ones, and the Lenox Chapter have on their register the names of many fathers, mothers, teachers and college professors, without them it would be impossible to conduct so large an organization. But by the aid of their advice, and wisdom, we are enabled to refer nearly every question to some one in the society, able and willing to answer all his enquiries.

Among the many branches of the A. A. is the Montreal which was organized on January 4, 1883, with a membership of six which has steadily increased and now numbers forty-six resident and eight corresponding and honorary members. The branch is in possession of a small library and museum but on account of the difficulty in obtaining a hall in the municipality of Cote St. Antoine (at which place the Society is established), the collection had to be stationed in a room which is far from accommodating, as a number of the members cannot gain access to the library, the greater part of the books are loaned and will not be circulated, therefore the library must remain closed to the members until some individual or individuals take compassion upon them and open up a way whereby the Society and all its possessions may be accessible to the public, so that the friends of the Association may see what our young naturalists are doing.

During the past year twenty-one regular meetings have been held, at which twenty-nine selections and three papers have been read. Two lectures were held last spring to obtain funds for the purchase of a cabinet, which met with

great success, the Society netting about \$35.00 all of which has been absorbed in the purchase of a large cabinet for the museum, and a book case. A course of lectures is proposed for next spring the proceeds to be devoted to renting a hall for the Society and also to the purchase of books and specimens.

Two field-days were held last summer on Mount Royal, at which the members gathered specimens and received prizes for the best collections, and from the number gathered it showed plainly that the members were not wanting in enthusiasm for the work.

At the annual meeting the following officers were installed for the ensuing year:

J. J. Proctor, president; E. C. Trenholme, vice-president; W. D. Shaw, sec.-treasurer; Geo. Edwards, assistant-secretary, and the members for the different committees, viz.: ZOOLOGY.—R. Mitchell, F. McCallum, J. Smith. BOTANY.—A. Hutchison, W. Bonat, A. Woodward. GEOLOGY.—J. Smith, A. Murray, A. Hutchison. ENTOMOLOGY (extra).—Geo. Edwards, E. Trenholme and W. D. Shaw. CONCHOLOGY (extra).—E. Trenholme, Geo. Edwards and H. Jemieson.

In conclusion I might say that many boys and girls, and not a few men and women who like little kittins, have never yet opened their eyes to see the wonders of the earth, and some of us, like babies when they first "find their fingers" begin to catch at everything new and strange. Likewise some of us are just learning to see trunks of trees so as to recognize their infinite variety of form and color; others have likely, it may be, seen for the first time the beauties of the sky with its ever-shifting miracles of white, blue and black, while slowly upon all we trust, is breaking the grand truth of a Divine mind expressing its thought in every leaf and pebble and of a Divine Heart showing its love in every rain-drop and in every flower. This was the truth which filled the great heart of him for whom the A. A. was named,—this was the secret of his untiring zeal, and the key to his boundless love of nature.

NOTES ON THE NATURAL HISTORY OF LABRADOR.

BY W. A. STEARNS.

(Fishes, continued.)

GADUS OGAC. *Greenland Codfish*.—Occasionally, but rarely, taken in deep water off the Labrador coast. Frequently taken within a mile from shore along the northern part of the coast, especially north of Belle Isle.

Often regarded as much more delicate eating than the common cod. Seldom grows large. Swims in bodies with small "tom cods," as they are called, which are probably the young of the common cod.

COTTUS SCORPIOIDES *Sculpin*.—Common in shoal water, about the fish stages, all along the coast.

COTTUS GRÆNLANDICUS. *Northern Sculpin*.—Common with *scorpioides*, all along the coast.

GYMNACANTHUS PISTILLIGER. *Sculpin*.—Rather common in the northern portions along the coast like the others.

HIPPOGLOSSOIDES PLATSSOIDES. *Arctic Dab*.—Common about the stage heads along the coast.

PLEURONECTES AMERICANUS. *Common Flounder*.—Rather common, usually in deeper water than the *H. Platssoides*, along the whole coast.

SOMNIOSUS MICROCEPHALUS. This species of shark is found not rare all along the coast, some years doing more damage than others. It breaks the fish-nets, stops the fish from attacking themselves to the trolls of the fishermen, and is finally captured itself by some of the innumerable hooks of this same troll. After tangling and otherwise ruining the lines to the best of its power, it itself becomes the prey of the fishermen, who curse it heartily. The liver of this fish is said to yield the most delicate and pure oil of any fish known upon the coast. Several portions of the vitals are preserved by the people with the greatest of care, under the supposition that the wearing or carrying of them or the simple having them in the house will prove sure protection against not only the rheumatism, but several diseases peculiar to the male sex.

There are several other species common along the coast but of which we were not fortunate enough to obtain specimens, notably the Launce, or Lance, the fall bait for the codfish. Several other species of trout are also common.

PLANTS.

In reviewing and adding to the excellent list of "Labrador Plants," by the Rev. S. R. Butler (Canadian Naturalist, vol. v, 1870, September, p. 350), it seems necessary to say a few words explanatory of the nature of the regions bordering the sea coast, as well also of those in the interior of Labrador.

There are two well-defined areas to which I would call attention; a simple designation of them as *sea-coast* and *interior* will present to you the general idea which I wish to convey. I will draw the line, as near as my own observation coincides with that of others, at somewhere between 2 and 4 miles inland. Of the interior of this whole region very little is

known. In summer, woods of mostly low, stunted spruce, with various evergreens, are everywhere abundant, and it is with the utmost difficulty that one can make any progress whatever. Few have attempted to penetrate this area, and we know but little of it. Its accessible edges abound in many plants very similar to ours, especially those crowning the summits of the White Mountains. That part styled the coast differs from the province just mentioned in that it is composed mostly of numerous low, hilly, inland crests, everywhere interposed with narrow straits of water, besides a narrow ribbon of land up and down the coast line itself. The general flora of all the islands is much the same, but there are localized species of both wild and introduced plants. Mr. Butler makes the following remarks prefatory to his enumeration of species in the above named paper: "The two places I have most thoroughly examined are Caribou Island and Forteau Bay. When a plant is marked 'Caribou,' it is meant that I found it only at that place; when 'Forteau' is mentioned, the plant may occur all around Forteau Bay, while 'Amour' means that I have found it only at 'L'Ance Amour,' and that it is not likely to occur elsewhere in the Bay; and where no locality is specified, the species may be expected to occur at many places, if not all along the coast." The collection of Miss MacFarlane, referred to in the same paper, has also afforded much valuable material. The specimens collected by myself were procured at *Harrington Harbor*, the southernmost limit visited, *Baie des Roches*, *Bonne Esperance* (in and about Salmon Bay); also the "winter quarters" of the inhabitants, a distance of 7 miles inland, up Esquimaux River, and which belongs to the mainland.

The list here presented is impartial and imperfect at best, but it will suffice until a more accurate and thorough examination of the country shall perfect it. The letter B, after a plant, signifies that the remarks are by Mr. Butler.

1. *ANEMONE PARVIFLORA*, Michx. — Common upon the high lands of Forteau. B.

2. *THALICTRUM DIOICUM*, Linn. — Common on the highlands, along the margin of streams, and in the interior visited by me, August 5.

3. *THALICTRUM CORNUTI*, Linn. — "(Miss MacFarlane, No. 1)."

4. *RANUNCULUS ACRIS*, Linn. — Rather common on the level grassy plats of Forteau, B., probably more or less distributed all along the coast in suitable localities.

5. *COPTIS TRIFOLIA*, Salisb.—Rather common in marshy grounds.

6. *NUPHAR ADVENA*, Aiton — "In ponds, Caribou." B.

7. *SARRACENIA PURPUREA*, Linn.—Very abundant in one or two confined areas on the large Mecatina Island, at Harrington Harbor, July 26, and found also in the wet places among the rocks inland, October 1880.

8. *ARABIS ALPINA*, Linn.—"Brooksides, Forteau." B.

9. *DRABA INCANA*, Linn.—"Caribou." B.

10. *COCHLEARIA TRIDACTYLITIS*, Linn.—"Seashore, Caribou." B.

11. *COCHLEARIA*,—,"Hilltops, Forteau." B.

12. *CAPELLA BURSA-PASTORIS*, Moench.—Probably introduced, abundant at Bonne Espérance about the yard and pathways, August 11.

13. *VIOLA BLANDA*, Willd.—In greater or less abundance all along the coast in damp localities.

14. *VIOLA CANINA*, L., var. *SYLVESTIS*, Regel.—Distributed much as in the preceding, but in dry localities.

15. *DROSER A ROTUNDIFOLIA*, Linn.—Not common. It is found in several localities along the coast. I found it in moist places about Bonne Espérance, August 12.

16. *SILENE ACAULIS*, Linn.—"Hilltops of Amour, also Old Fort Island." B.

17. *ARENARIA GROENLANDICA*, Spreng.—This was found on the summits of many hilly crests at Baie des Roches, and though I did not find it elsewhere I suspect it occurs in like situation all along the coast.

18. *ARENARIA PEPOIDES*, Linn.—Quite common, springing up in the sand along the shore. Mr. Butler found it at Caribou and at Forteau. I think it occurs generally.

19. *ARENARIA VERNA*, Linn.—"Hillsides, Amour." B.

20. *ARENARIA LATERIFLORA*, Linn.—I suspect pretty generally common, as Mr. Butler remarks, in "level, grassy places."

21. *STELLARIA LONGIPES*, Goldie.—Common all along the sea-coast Very common at Bonne Espérance, August 11.

22. *STELLARIA LONGIPES*. Godie, var., EDWARDSII, Torr. & Gray. ("Miss MacFarlane, No. 9. Torrey & Gray very properly reduce this to a variety of the last species.")

23. *STELLARIA BOREALIS*, Bigelow.—Common on hilly slopes along the coast, especially at Caribou, B., and Bonne Espérance islands, August 11.

24. *STELLARIA CRASSIFOLIA*, Ehrh.—Dis-

tributed much the same as *longipes* and *borealis*, occurring in damp localities, August 11.

25. *CERASTIUM ALPINUM*, Linn.—"Very common at Forteau." B.

26. *CERASTIUM ARVENSE*, Linn.—"Abundant about Forteau." B.

27. *ASTRAGALUS ALPINUS*, Linn.—"Hillsides, Amour." B.

28. *HEDYSARUM BOREALE*, Nuttall.—"Hillsides, Amour." B.

29. *OXYTROPIS CAMPESTRIS*, D. C.—"Hillsides near Forteau light house." B.

30. *LATHYRUS MARITIMUS*, Bigelow.—More or less common all along the coast in dry and moist places and on low land. Early August.

31. *LATHYRUS PALUSTRIS*, Linn.—"At Caribou," B., and *probably* other places along the coast.

32. *POTERIUM CANADENSE*, Benth & Hook.—Very common on the dry, sloping flats along the coast. August 6.

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